This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

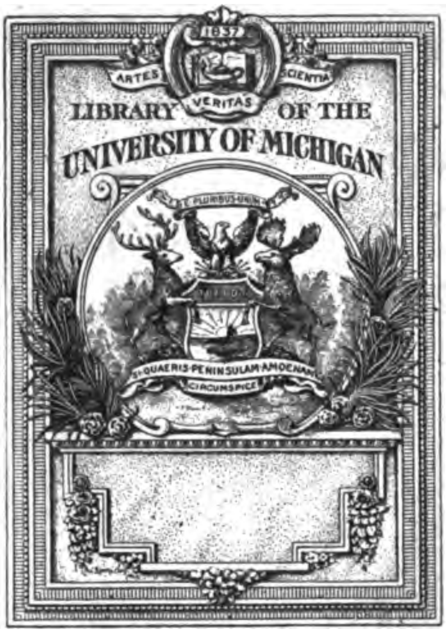
+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

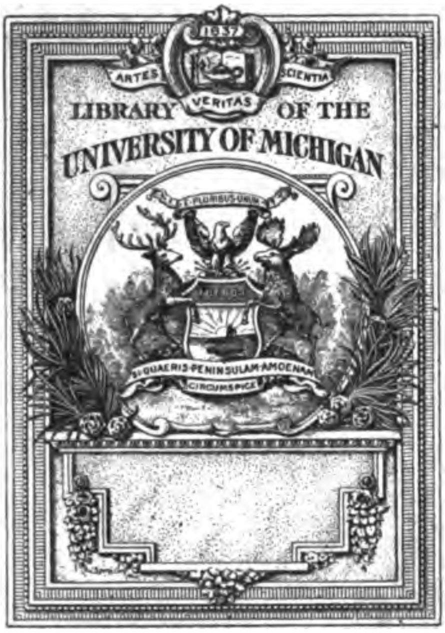
About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

1,058,703


1837
ARTES VERITAS SCIENTIA
LIBRARY OF THE
UNIVERSITY OF MICHIGAN
E PLURIBUS UNUM
TUEBOR
SI QUAERIS PENINSULAM AMOENAM
CIRCUMSPICE

QB
8
.U5
2d ed.


1837
ARTES
VERITAS
SCIENTIA
LIBRARY OF THE
UNIVERSITY OF MICHIGAN
E PLURIBUS UNUM
TUEBOR
SI QUAERIS PENINSULAM AMOENAM
CIRCUMSPICE

QB
8
.U5
2d ed.

THE

AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC

FOR THE YEAR

1893

SECOND EDITION

PUBLISHED IN COMPLIANCE WITH A JOINT RESOLUTION OF THE FORTY-SIXTH CONGRESS

WASHINGTON:
BUREAU OF EQUIPMENT.
1892.

JOINT RESOLUTION

FOR PRINTING THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be printed annually at the Government Printing Office fifteen hundred copies of the American Ephemeris and Nautical Almanac and of the papers supplementary thereto, of which one hundred shall be for the use of the Senate, four hundred for the House of Representatives, and one thousand for the public service, to be distributed by the Navy Department.

Sec. 2. *That additional copies of the Ephemeris and of the Nautical Almanac extracted therefrom may be ordered by the Secretary of the Navy for sale: Provided, That all moneys received from such sale shall be deposited in the Treasury to the credit of the appropriation for public printing.*

Approved, February 11, 1880

PREFACE.

THE arrangement of *The American Ephemeris* adopted in the volume for the year 1882, and explained in the Appendix to that volume, has been continued without radical change to the present time.

The additions then made comprise more complete data for eclipses of the sun, diagrams showing the configurations of the satellites of Jupiter, data respecting the disks of Mercury and Venus for the reduction of meridian and photometric observations, and diagrams, with tables, for identifying any known satellites of other planets. The work is divided into three parts, as follows:—

Part I, *Ephemeris for the Meridian of Greenwich*, gives the heliocentric and geocentric positions of the major planets, the Ephemeris of the Sun, and other fundamental astronomical data for equidistant intervals of Greenwich mean time.

Part II, *Ephemeris for the Meridian of Washington*, gives the ephemerides of the fixed stars, sun, moon, and major planets for transit over the meridian of Washington. The mean places of the fixed stars and the data for their reduction are also included in this part. The list of mean and apparent places of fixed stars has been greatly enlarged, for the convenience of field-astronomers.

Part III, *Phenomena*, contains predictions of phenomena to be observed, with data for their computation. Washington mean time is used in this part except in a few cases, notably that of eclipses, where Greenwich mean time was judged more convenient.

SIMON NEWCOMB,
Professor U. S. Navy, Superintendent.

WASHINGTON, *Aug.*, 1890.

CONTENTS.

	Page
Corrections	vi
Chronological Eras and Cycles	vii
Symbols and Abbreviations	viii

PART I—*EPHEMERIS FOR THE MERIDIAN OF GREENWICH.*

	Pages of Each Month
Ephemeris of the Sun	I—III
Ephemeris of the Moon	IV—XII
Phases of the Moon	XII
Lunar Distances	XIII—XVIII

	Page
Geocentric Ephemerides of the Planets Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune	218
Heliocentric Ephemerides of the Planets Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune	250
Sun's Co-ordinates	264
Moon's Longitude and Latitude	272
Moon's Equator and Libration	276
Obliquity of the Ecliptic, Equation of Equinoxes, Precession, etc.	278

PART II—*EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.*

BESSEL's Formulæ for Star-Reductions	280
Besselian Star-Numbers, *A*, *B*, *C*, *D*	281
Independent Star-Numbers, *f*, *g*, *h*, etc.	285
Mean Places of Standard Stars for 1893.0	293
Apparent Places of Four Circumpolar Stars	302
Apparent Places of Other Standard Stars	314
Apparent Right Ascensions of Additional Stars	365
Ephemeris of the Sun	377
Moon-Culminations	385
Transit-Ephemerides of the Planets Mercury, Venus, Jupiter, Saturn, Uranus, Neptune	393

PART III—*PHENOMENA.*

Eclipses	410
Moon's Phases, Apogee, Perigee, and Greatest Libration	416
Elements for the Prediction of Occultations	417
Occultations Visible at Washington	446
DOWNES's Table for Facilitating the Prediction of Occultations	448
Disk of Mercury	450
Disk of Venus	451
Disk of Mars	452
Satellites of Jupiter	453
Satellites of Saturn	478
Rings of Saturn	481
Satellites of Uranus	482
Satellite of Neptune	483
Phenomena, Planetary Constellations	484
Positions of Observatories	486
On the Arrangement and Use of *The American Ephemeris and Nautical Almanac*	491

APPENDIX.

On the Construction of *The American Ephemeris and Nautical Almanac* for 1893	517

TABLES.

Table I.—Correction of Lunar Distances for Second Differences in Moon's Motion	521
Table II.—Reduction of Sidereal to Mean Solar Time	522
Table III.—Reduction of Mean Solar to Sidereal Time	525
Table IV.—Latitude by Observation of the Altitude of Polaris	528

CORRECTIONS.

Ephemeris for 1890.

Page 221,	July 4, R. A. of Mercury,	*for* 3^{h}	*read* 5^{h}
224,	Jan. 10, Mer. Pass. of Venus,	“ $23^{h}\,28^{m}.1$	“ $23^{h}\,29^{m}.1$
243,	April 6, R. A. of Saturn,	“ $10^{h}\,0^{m}$	“ $10^{h}\,1^{m}$
487,	Dec. $31^{d}\,2^{h}$,	“ in Perihelion	“ ⊕ in Perihelion

Ephemeris for 1891 (*First Edition only*).

Page 298,	Dec. of 4 Ursæ Minoris,	*for* 78° 8′ 35″.14	*read* 78° 3′ 35″.14
300,	R. A., α^{2} Capricorni,	“ 29^{h}	“ 20^{h}
332,	Dec., α Leonis,	“ 19°	“ 12°
350,	R. A., γ Draconis,	“ 15^{h}	“ 17^{h}
387,	Bright Limb of Moon from May 8 to May 18,	“ II	“ I
501,	Lines 30 and 31,	“ Chicago	*read* a point 1° South of Chicago
	and	“ 41°	“ 40°

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1893, WHICH COMPRISES THE LATTER PART OF THE 117TH AND THE BEGINNING OF THE 118TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6606 of the Julian Period;

" 7401–7402 of the Byzantine era, the year 7402 commencing on September 1st;

" 5653–54 of the Jewish era, the year 5654 commencing on September 11th, or, more exactly, at sunset on September 10th;

" 2646 since the foundation of Rome, according to VARRO;

" 2640 since the beginning of the era of NABONASSAR, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period; corresponding, in the notation of chronologists, to the 747th; and, in the notation of astronomers, to the 746th year before the birth of CHRIST;

" 2669 of the Olympiads, or the first year of the 668th Olympiad commencing in July, 1893, if we fix the era of the Olympiads at 775½ years before CHRIST, or near the beginning of July of the year 3938 of the Julian Period;

" 2205 of the Grecian era, or the era of the Seleucidæ;

" 1609 of the era of DIOCLETIAN;

" 2553 of the Japanese era and to the 26th year of the period entitled "Meiji."

The year 1311 of the Mohammedan era, or the era of the Hegira, begins on the 15th day of July, 1893.

The first day of January of the year 1893 is the 2,412,465th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	A	Solar Cycle	26
Epact	12	Roman Indiction	6
Lunar Cycle or Golden Number	13	Julian Period	6606

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, ETC.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	♅	Uranus.
⊕	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring Signs.	1.	♈	Aries.	Autumn Signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpius.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer Signs.	4.	♋	Cancer.	Winter Signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌	Conjunction, or having the same Longitude or Right Ascension.
□	Quadrature, or differing 90° in Longitude or Right Ascension.
☍	Opposition, or differing 180° in Longitude or Right Ascension.

ABBREVIATIONS.

☊	Ascending Node.	°	Degrees.
☋	Descending Node.	′	Minutes of Arc.
N.	North.	″	Seconds of Arc.
S.	South.	$^{\mathrm{h}}$	Hours.
E.	East.	$^{\mathrm{m}}$	Minutes of Time.
W.	West.	$^{\mathrm{s}}$	Seconds of Time.

PART I.

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF GREENWICH.

AT GREENWICH APPARENT NOON

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
SUN.	1	18 49 27.23	11.031	S. 22 58 4.9	+13.04	16 18.41	71.04	4 0.25	1.172
Mon.	2	18 53 51.79	11.016	22 52 38.4	14.17	16 18.41	70.99	4 28.19	1.156
Tues.	3	18 58 15.98	10.999	22 46 44.7	15.30	16 18.40	70.94	4 55.74	1.139
Wed.	4	19 2 39.76	10.982	22 40 23.8	+16.43	16 18.39	70.88	5 22.88	1.122
Thur.	5	19 7 3.12	10.964	22 33 36.0	17.55	16 18.36	70.82	5 49.61	1.104
Frid.	6	19 11 26.03	10.945	22 26 21.5	18.65	16 18.34	70.76	6 15.89	1.085
Sat.	7	19 15 48.47	10.925	22 18 40.4	+19.76	16 18.30	70.68	6 41.70	1.065
SUN.	8	19 20 10.42	10.904	22 10 33.1	20.85	16 18.26	70.62	7 7.03	1.044
Mon.	9	19 24 31.85	10.881	22 1 59.6	21.93	16 18.22	70.55	7 31.83	1.022
Tues.	10	19 28 52.73	10.858	21 53 0.4	+23.00	16 18.16	70.47	7 56.08	0.999
Wed.	11	19 33 13 04	10.834	21 43 35.4	24.07	16 18.11	70.39	8 19.78	0.975
Thur.	12	19 37 32.77	10.809	21 33 45.2	25.11	16 18.05	70.30	8 42.88	0.950
Frid.	13	19 41 51.89	10.784	21 23 29.9	+26.15	16 17.98	70.22	9 5.38	0.924
Sat.	14	19 46 10.38	10.756	21 12 49.8	27.18	16 17.91	70.12	9 27.24	0.897
SUN.	15	19 50 28.19	10.728	21 1 45.2	28.19	16 17.84	70.03	9 48.45	0.870
Mon.	16	19 54 45.34	10.700	20 50 16.5	+29.20	16 17.77	69.94	10 8.98	0.841
Tues.	17	19 59 1.79	10.670	20 38 23.9	30.18	16 17.69	69.84	10 28.80	0.811
Wed.	18	20 3 17.50	10.640	20 26 7.9	31.15	16 17.60	69.74	10 47.91	0.781
Thur.	19	20 7 32 47	10.608	20 13 28.6	+32.11	16 17.51	69.64	11 6.29	0.750
Frid.	20	20 11 46.69	10.576	20 0 26.6	33.05	16 17.42	69.54	11 23.90	0.718
Sat.	21	20 16 0.13	10.544	19 47 2.2	33.98	16 17.33	69.43	11 40.73	0.685
SUN.	22	20 20 12.78	10.510	19 33 15.7	+34.89	16 17.23	69.33	11 56.78	0.652
Mon.	23	20 24 24.63	10.477	19 19 7.6	35.78	16 17.13	69.22	12 12.04	0.619
Tues.	24	20 28 35.66	10.443	19 4 38.1	36.66	16 17.02	69.11	12 26.47	0.584
Wed.	25	20 32 45.88	10.409	18 49 47.8	+37.52	16 16.91	69.00	12 40.09	0.550
Thur.	26	20 36 55.27	10.374	18 34 37.1	38.37	16 16.80	68.89	12 52.89	0.516
Frid.	27	20 41 3.83	10.339	18 19 6.2	39.20	16 16.68	68.78	13 4.86	0.481
Sat.	28	20 45 11.55	10.304	18 3 15.6	+40.00	16 16.55	68.66	13 15.99	0.446
SUN.	29	20 49 18.43	10.270	17 47 5.7	40.81	16 16.42	68.55	13 26.28	0.412
Mon.	30	20 53 24.49	10.235	17 30 36.9	41.59	16 16.28	68.44	13 35.77	0.378
Tues.	31	20 57 29.71	10.202	17 13 49.6	42.35	16 16.14	68.32	13 44.40	0.343
Wed.	32	21 1 34.10	10.166	S. 16 56 44.2	+43.10	16 15.99	68.21	13 52.22	0.309

Note.—The mean time of semidiameter passing may be found by subtracting 0s.19 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
SUN.	1	18 49 26.49	11.027	S. 22 58 5.8	+13.06	4 0.17	1.172	18 45 26.32
Mon.	2	18 53 50.97	11.012	22 52 39.5	14.18	4 28.10	1.156	18 49 22.87
Tues.	3	18 58 15.07	10.996	22 46 46.0	15.30	4 55.64	1.139	18 53 19.43
Wed.	4	19 2 38.77	10.979	22 40 25.3	+16.42	5 22.78	1.122	18 57 15.99
Thur.	5	19 7 2.05	10.961	22 33 37.7	17.54	5 49.50	1.104	19 1 12.55
Frid.	6	19 11 24.88	10.942	22 26 23.5	18.65	6 15.77	1.085	19 5 9.11
Sat.	7	19 15 47.25	10.922	22 18 42.7	+19.75	6 41.58	1.065	19 9 5.67
SUN.	8	19 20 9.12	10.901	22 10 35.6	20.84	7 6.90	1.044	19 13 2.22
Mon.	9	19 24 30.48	10.878	22 2 2.4	21.92	7 31.70	1.022	19 16 58.78
Tues.	10	19 28 51.29	10.856	21 53 3.4	+22.99	7 55.95	0.999	19 20 55.34
Wed.	11	19 33 11.54	10.832	21 43 38.8	24.05	8 19.64	0.975	19 24 51.90
Thur.	12	19 37 31.20	10.807	21 33 48.9	25.10	8 42.74	0.950	19 28 48.46
Frid.	13	19 41 50.26	10.781	21 23 33.9	+26.14	9 5.24	0.924	19 32 45.02
Sat.	14	19 46 8.68	10.754	21 12 54.2	27.17	9 27.10	0.897	19 36 41.58
SUN.	15	19 50 26.44	10.726	21 1 49.9	28.18	9 48.31	0.870	19 40 38.13
Mon.	16	19 54 43.53	10.697	20 50 21.5	+29.18	10 8.84	0.841	19 44 34.69
Tues.	17	19 58 59.91	10.668	20 38 29.2	30.17	10 28.66	0.811	19 48 31.25
Wed.	18	20 3 15.58	10.637	20 26 13.5	31.14	10 47.77	0.781	19 52 27.81
Thur.	19	20 7 30.51	10.606	20 13 34.6	+32.09	11 6.15	0.750	19 56 24.36
Frid.	20	20 11 44.68	10.574	20 0 33.0	33.04	11 23.76	0.718	20 0 20.92
Sat.	21	20 15 58.08	10.542	19 47 8.8	33.96	11 40.60	0.685	20 4 17.48
SUN.	22	20 20 10.69	10.509	19 33 22.7	+34.87	11 56.65	0.652	20 8 14.04
Mon.	23	20 24 22.50	10.475	19 19 14.9	35.77	12 11.91	0.619	20 12 10.59
Tues.	24	20 28 33.50	10.441	19 4 45.8	36.65	12 26.35	0.585	20 16 7.15
Wed.	25	20 32 43.68	10.407	18 49 55.8	+37.51	12 39.97	0.551	20 20 3.71
Thur.	26	20 36 53.04	10.373	18 34 45.4	38.35	12 52.78	0.516	20 24 0.26
Frid.	27	20 41 1.57	10.337	18 19 14.8	39.19	13 4.75	0.481	20 27 56.82
Sat.	28	20 45 9.27	10.303	18 3 24.5	+40.00	13 15.89	0.447	20 31 53.38
SUN.	29	20 49 16.13	10.269	17 47 15.0	40.81	13 26.19	0.412	20 35 49.94
Mon.	30	20 53 22.17	10.234	17 30 46.4	41.57	13 35.68	0.378	20 39 46.49
Tues.	31	20 57 27.37	10.200	17 13 59.4	42.34	13 44.32	0.343	20 43 43.05
Wed.	32	21 1 31.75	10.165	S. 16 56 54.2	+43.09	13 52.15	0.309	20 47 39.60

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour, $+9^{s}.8565$. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	1	281 22 21.3	22 30.3	152.85	+ 0.43	9.9926526	+ 0.2	5 13 42.15
2	2	282 23 29.6	23 38.4	152.85	0.50	9.9926538	1.1	5 9 46.24
3	3	283 24 37.9	24 46.5	152.85	0.54	9.9926578	2.3	5 5 50.33
4	4	284 25 46.2	25 54.6	152.84	+ 0.55	9.9926647	+ 3.5	5 1 54.41
5	5	285 26 54.4	27 2.6	152.84	0.53	9.9926745	4.6	4 57 58.50
6	6	286 28 2.6	28 10.6	152.84	0.48	9.9926870	5.8	4 54 2.59
7	7	287 29 10.8	29 18.6	152.84	+ 0.41	9.9927022	+ 6.9	4 50 6.67
8	8	288 30 19.0	30 26.6	152.84	0.31	9.9927200	7.9	4 46 10.77
9	9	289 31 27.2	31 34.6	152.84	0.19	9.9927403	9.0	4 42 14.85
10	10	290 32 35.4	32 42.6	152.84	+ 0.05	9.9927630	+ 9.9	4 38 18.94
11	11	291 33 43.5	33 50.6	152.84	− 0.08	9.9927878	10.8	4 34 23.03
12	12	292 34 51.5	34 58.4	152.83	0.21	9.9928146	11.6	4 30 27.11
13	13	293 35 59.4	36 6.1	152.82	− 0.33	9.9928434	+12.4	4 26 31.20
14	14	294 37 7.1	37 13.6	152.81	0.44	9.9928741	13.1	4 22 35.28
15	15	295 38 14.4	38 20.8	152.80	0.53	9.9929065	13.8	4 18 39.38
16	16	296 39 21.3	39 27.5	152.78	− 0.60	9.9929404	+14.5	4 14 43.47
17	17	297 40 27.7	40 33.7	152.75	0.64	9.9929759	15.1	4 10 47.55
18	18	298 41 33.5	41 39.3	152.73	0.65	9.9930130	15.8	4 6 51.64
19	19	299 42 38.6	42 44.3	152.70	− 0.62	9.9930517	+16.5	4 2 55.73
20	20	300 43 42.9	43 48.4	152.66	0.56	9.9930920	17.1	3 58 59.82
21	21	301 44 46.3	44 51.6	152.62	0.48	9.9931340	17.8	3 55 3.90
22	22	302 45 48.7	45 53.9	152.58	− 0.37	9.9931776	+18.5	3 51 7.99
23	23	303 46 50.0	46 55.0	152.53	0.25	9.9932230	19.3	3 47 12.09
24	24	304 47 50.3	47 55.1	152.49	− 0.12	9.9932702	20.1	3 43 16.17
25	25	305 48 49.4	48 54.0	152.44	+ 0.01	9.9933193	+20.9	3 39 20.26
26	26	306 49 47.3	49 51.8	152.39	0.14	9.9933705	21.8	3 35 24.35
27	27	307 50 44.0	50 48.3	152.34	0.25	9.9934240	22.8	3 31 28.44
28	28	308 51 39.6	51 43.8	152.29	+ 0.35	9.9934799	+23.8	3 27 32.53
29	29	309 52 33.9	52 37.9	152.24	0.43	9.9935381	24.8	3 23 36.61
30	30	310 53 26.9	53 30.7	152.18	0.48	9.9935988	25.8	3 19 40.71
31	31	311 54 18.7	54 22.4	152.13	0.50	9.9936620	26.9	3 15 44.79
32	32	312 55 9.3	55 12.8	152.09	+ 0.48	9.9937277	+27.9	3 11 48.89

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0ᵈ.0.

Diff. for 1 Hour, —9ˢ.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 28.2	16 25.7	60 20.3	−0.63	60 10.9	−0.93	11 29.2	2.69	13.2
2	16 22.1	16 17.7	59 57.9	1.23	59 41.5	1.49	12 34.2	2.63	14.2
3	16 12.4	16 6.4	59 22.1	1.72	59 0.2	1.90	13 35.0	2.43	15.2
4	16 0.0	15 53.1	58 36 5	−2.04	58 11.3	−2.13	14 30.4	2.19	16.2
5	15 46.0	15 38.9	57 45.3	2.17	57 19.2	2.16	15 20.5	1.99	17.2
6	15 31.9	15 25.1	56 53.4	2.12	56 28.4	2.03	16 6.2	1.83	18.2
7	15 18.6	15 12.6	56 4.7	−1.91	55 42.6	−1.76	16 48.6	1.72	19.2
8	15 7.1	15 2.2	55 22.5	1.59	55 4.5	1.40	17 29.3	1.68	20.2
9	14 57.9	14 54.4	54 49.0	1.19	54 35.9	0.98	18 9.5	1.68	21.2
10	14 51.6	14 49.5	54 25.4	−0.76	54 17.6	−0.55	18 50.4	1.73	22.2
11	14 48.0	14 47.3	54 12.3	−0.33	54 9.6	−0.12	19 33.0	1.82	23.2
12	14 47.2	14 47.8	54 9.4	+0.08	54 11.6	+0.27	20 18.2	1.95	24.2
13	14 49.0	14 50.8	54 15.9	+0.45	54 22.4	+0.62	21 6.5	2.07	25.2
14	14 53.0	14 55.8	54 30.7	0.76	54 40.7	0.89	21 57.8	2.19	26.2
15	14 58.9	15 2.3	54 52.1	1.00	55 4.8	1.10	22 51.2	2.26	27.2
16	15 6.0	15 10.0	55 18.5	+1.17	55 32.9	+1.22	23 45.4	2.26	28.2
17	15 14.0	15 18.2	55 47.8	1.25	56 3.0	1.28	6		29.2
18	15 22.4	15 26.5	56 18.4	1.28	56 33.7	1.26	0 38.9	2.19	0.4
19	15 30.6	15 34.6	56 48.7	+1.24	57 3.5	+1.21	1 30.6	2.11	1.4
20	15 38.5	15 42.3	57 17.8	1.18	57 31.7	1.13	2 19.9	2.01	2.4
21	15 45.9	15 49.4	57 45.0	1.09	57 57.8	1.04	3 7.3	1.95	3.4
22	15 52.7	15 55.9	58 10.0	+0.99	58 21.6	+0.95	3 53.6	1.93	4.4
23	15 58.9	16 1.7	58 32.7	0.90	58 43.1	0.84	4 39.9	1.95	5.4
24	16 4.4	16 6.9	58 52.8	0.78	59 1.9	0.72	5 27.6	2.03	6.4
25	16 9.1	16 11.0	59 10.0	+0.63	59 17.1	+0.55	6 18.1	2.18	7.4
26	16 12.6	16 13.9	59 23.1	0.44	59 27.7	0.32	7 12.5	2.35	8.4
27	16 14.7	16 15.1	59 30.8	+0.18	59 32.0	+0.02	8 11.1	2.52	9.4
28	16 14.9	16 14.1	59 31.3	−0.15	59 28.4	−0.34	9 13.1	2.63	10.4
29	16 12.7	16 10.6	59 23.2	0.53	59 15.6	0.73	10 16.4	2.62	11.4
30	16 7.9	16 4.5	59 5.6	0.93	58 53.2	1.13	11 18.0	2.49	12.4
31	16 0.5	15 56.0	58 38.6	1.30	58 22.1	1.45	12 15.5	2.30	13.4
32	15 51.0	15 45.7	58 3.8	−1.58	57 44.2	−1.68	13 8.2	2.10	14.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
SUNDAY 1.					**TUESDAY 3.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 45 13.69	2.7624	N.27 20 29.0	2.997	0	7 55 50.28	2.6059	N.25 51 20.4	6.406
1	5 47 59.48	2.7638	27 23 22.7	2.792	1	7 58 26.41	2.5985	25 44 51.0	6.574
2	5 50 45.35	2.7652	27 26 4.0	2.586	2	8 1 2.10	2.5911	25 38 11.5	6.741
3	5 53 31.30	2.7663	27 28 33.0	2.380	3	8 3 37.34	2.5835	25 31 22.1	6.905
4	5 56 17.31	2.7672	27 30 49.6	2.173	4	8 6 12.12	2.5758	25 24 22.9	7.067
5	5 59 3.36	2.7678	27 32 53.8	1.966	5	8 8 46.43	2.5680	25 17 14.0	7.227
6	6 1 49.45	2.7683	27 34 45.5	1.758	6	8 11 20.28	2.5602	25 9 55.6	7.385
7	6 4 35.56	2.7685	27 36 24.8	1.552	7	8 13 53.65	2.5522	25 2 27.7	7.542
8	6 7 21.67	2.7685	27 37 51.8	1.346	8	8 16 26.54	2.5441	24 54 50.5	7.697
9	6 10 7.78	2.7684	27 39 6.3	1.139	9	8 18 58.94	2.5360	24 47 4.0	7.851
10	6 12 53.88	2.7681	27 40 8.4	0.932	10	8 21 30.86	2.5278	24 39 8.4	8.002
11	6 15 39.95	2.7674	27 40 58.1	0.724	11	8 24 2.28	2.5196	24 31 3.8	8.150
12	6 18 25.97	2.7666	27 41 35.3	0.517	12	8 26 33.21	2.5113	24 22 50.4	8.297
13	6 21 11.94	2.7656	27 42 0.1	0.310	13	8 29 3.64	2.5029	24 14 28.2	8.443
14	6 23 57.84	2.7643	27 42 12.5	+ 0.104	14	8 31 33.56	2.4945	24 5 57.3	8.587
15	6 26 43.66	2.7628	27 42 12.6	− 0.102	15	8 34 2.98	2.4861	23 57 17.8	8.728
16	6 29 29.38	2.7611	27 42 0.3	0.307	16	8 36 31.89	2.4776	23 48 29.9	8.867
17	6 32 14.99	2.7592	27 41 35.7	0.513	17	8 39 0.29	2.4690	23 39 33.7	9.004
18	6 35 0.48	2.7571	27 40 58.7	0.718	18	8 41 28.17	2.4604	23 30 29.4	9.139
19	6 37 45.84	2.7547	27 40 9.5	0.923	19	8 43 55.54	2.4518	23 21 17.0	9.273
20	6 40 31.05	2.7522	27 39 8.0	1.127	20	8 46 22.39	2.4432	23 11 56.6	9.406
21	6 43 16.10	2.7494	27 37 54.3	1.330	21	8 48 48.72	2.4345	23 2 28.3	9.536
22	6 46 0.98	2.7464	27 36 28.4	1.532	22	8 51 14.53	2.4258	22 52 52.3	9.663
23	6 48 45.67	2.7432	N.27 34 50.4	1.733	23	8 53 39.82	2.4171	N.22 43 8.8	9.788
MONDAY 2.					**WEDNESDAY 4.**				
0	6 51 30.17	2.7399	N.27 33 0.4	1.934	0	8 56 4.58	2.4084	N.22 33 17.8	9.912
1	6 54 14.46	2.7363	27 30 58.3	2.135	1	8 58 28.82	2.3997	22 23 19.4	10.033
2	6 56 58.53	2.7325	27 28 44.2	2.334	2	9 0 52.54	2.3909	22 13 13.8	10.153
3	6 59 42.36	2.7285	27 26 18.2	2.532	3	9 3 15.73	2.3821	22 3 1.0	10.271
4	7 2 25.95	2.7244	27 23 40.3	2.730	4	9 5 38.39	2.3733	21 52 41.2	10.387
5	7 5 9.29	2.7201	27 20 50.6	2.927	5	9 8 0.53	2.3646	21 42 14.6	10.500
6	7 7 52.36	2.7155	27 17 49.1	3.123	6	9 10 22.15	2.3559	21 31 41.2	10.612
7	7 10 35.15	2.7107	27 14 35.9	3.317	7	9 12 43.24	2.3472	21 21 1.1	10.722
8	7 13 17.65	2.7058	27 11 11.1	3.509	8	9 15 3.81	2.3385	21 10 14.5	10.830
9	7 15 59.85	2.7007	27 7 34.8	3.701	9	9 17 23.86	2.3297	20 59 21.5	10.937
10	7 18 41.74	2.6955	27 3 47.0	3.892	10	9 19 43.38	2.3211	20 48 22.1	11.041
11	7 21 23.31	2.6900	26 59 47.8	4.080	11	9 22 2.39	2.3125	20 37 16.5	11.143
12	7 24 4.54	2.6844	26 55 37.4	4.268	12	9 24 20.88	2.3038	20 26 4.9	11.243
13	7 26 45.43	2.6787	26 51 15.7	4.455	13	9 26 38.85	2.2952	20 14 47.3	11.342
14	7 29 25.98	2.6728	26 46 42.8	4.640	14	9 28 56.31	2.2867	20 3 23.8	11.439
15	7 32 6.17	2.6667	26 41 58.9	4.823	15	9 31 13.25	2.2781	19 51 54.6	11.533
16	7 34 45.99	2.6605	26 37 4.0	5.006	16	9 33 29.68	2.2696	19 40 19.8	11.626
17	7 37 25.43	2.6542	26 31 58.1	5.187	17	9 35 45.60	2.2612	19 28 39.5	11.717
18	7 40 4.49	2.6477	26 26 41.5	5.366	18	9 38 1.02	2.2528	19 16 53.7	11.807
19	7 42 43.16	2.6411	26 21 14.2	5.543	19	9 40 15.93	2.2444	19 5 2.6	11.894
20	7 45 21.42	2.6342	26 15 36.3	5.720	20	9 42 30.34	2.2361	18 53 6.4	11.979
21	7 47 59.27	2.6273	26 9 47.8	5.895	21	9 44 44.26	2.2278	18 41 5.1	12.063
22	7 50 36.70	2.6203	26 3 48.9	6.067	22	9 46 57.68	2.2196	18 28 58.8	12.146
23	7 53 13.71	2.6132	25 57 39.7	6.237	23	9 49 10.61	2.2114	18 16 47.6	12.226
24	7 55 50.28	2.6059	N.25 51 20.4	6.406	24	9 51 23.05	2.2032	N.18 4 31.7	12.304

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 5.					**SATURDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 51 23.05	2.2032	N.18 4 31.7	12.304	0	11 29 6.49	1.8995	N. 7 13 4.2	14.318
1	9 53 35.00	2.1952	17 52 11.1	12.381	1	11 31 0.33	1.8953	6 58 44.8	14.330
2	9 55 46.47	2.1872	17 39 46.0	12.456	2	11 32 53.92	1.8912	6 44 24.6	14.342
3	9 57 57.46	2.1792	17 27 16.4	12.529	3	11 34 47.27	1.8871	6 30 3.8	14.351
4	10 0 7.97	2.1713	17 14 42.5	12.601	4	11 36 40.37	1.8830	6 15 42.5	14.360
5	10 2 18.01	2.1635	17 2 4.3	12.671	5	11 38 33.23	1.8791	6 1 20.6	14.368
6	10 4 27.59	2.1557	16 49 22.0	12.739	6	11 40 25.86	1.8753	5 46 58.3	14.375
7	10 6 36.70	2.1480	16 36 35.6	12.806	7	11 42 18.26	1.8715	5 32 35.6	14.381
8	10 8 45.35	2.1403	16 23 45.3	12.870	8	11 44 10.44	1.8679	5 18 12.6	14.386
9	10 10 53.54	2.1327	16 10 51.2	12.933	9	11 46 2.41	1.8644	5 3 49.3	14.390
10	10 13 1.27	2.1252	15 57 53.4	12.995	10	11 47 54.17	1.8609	4 49 25.8	14.394
11	10 15 8.56	2.1178	15 44 51.8	13.057	11	11 49 45.72	1.8575	4 35 2.1	14.397
12	10 17 15.41	2.1105	15 31 46.6	13.116	12	11 51 37.07	1.8542	4 20 38.2	14.398
13	10 19 21.82	2.1032	15 18 37.9	13.172	13	11 53 28.22	1.8510	4 6 14.3	14.398
14	10 21 27.79	2.0959	15 5 25.9	13.227	14	11 55 19.19	1.8479	3 51 50.4	14.398
15	10 23 33.33	2.0887	14 52 10.7	13.280	15	11 57 9.97	1.8448	3 37 26.5	14.397
16	10 25 38.44	2.0817	14 38 52.3	13.333	16	11 59 0.57	1.8419	3 23 2.7	14.395
17	10 27 43.14	2.0748	14 25 30.7	13.385	17	12 0 51.00	1.8390	3 8 39.1	14.392
18	10 29 47.42	2.0679	14 12 6.1	13.434	18	12 2 41.25	1.8362	2 54 15.7	14.388
19	10 31 51.29	2.0611	13 58 38.6	13.482	19	12 4 31.34	1.8336	2 39 52.5	14.384
20	10 33 54.75	2.0544	13 45 8.2	13.529	20	12 6 21.28	1.8310	2 25 29.6	14.379
21	10 35 57.81	2.0477	13 31 35.1	13.574	21	12 8 11.06	1.8284	2 11 7.0	14.373
22	10 38 0.47	2.0410	13 17 59.3	13.618	22	12 10 0.69	1.8260	1 56 44.8	14.366
23	10 40 2.73	2.0344	N.13 4 20.9	13.661	23	12 11 50.18	1.8237	N. 1 42 23.1	14.359
	FRIDAY 6.					**SUNDAY 8.**			
0	10 42 4.60	2.0280	N.12 50 40.0	13.702	0	12 13 39.53	1.8214	N. 1 28 1.8	14.351
1	10 44 6.09	2.0217	12 36 56.7	13.742	1	12 15 28.75	1.8192	1 13 41.0	14.349
2	10 46 7.21	2.0155	12 23 11.0	13.780	2	12 17 17.84	1.8172	0 59 20.8	14.331
3	10 48 7.95	2.0093	12 9 23.1	13.817	3	12 19 6.81	1.8152	0 45 1.3	14.320
4	10 50 8.32	2.0032	11 55 33.0	13.853	4	12 20 55.66	1.8132	0 30 42.4	14.309
5	10 52 8.33	1.9972	11 41 40.7	13.888	5	12 22 44.39	1.8113	0 16 24.2	14.297
6	10 54 7.99	1.9913	11 27 46.4	13.922	6	12 24 33.01	1.8095	N. 0 2 6.7	14.285
7	10 56 7.29	1.9855	11 13 50.1	13.953	7	12 26 21.53	1.8079	S. 0 12 10.0	14.271
8	10 58 6.25	1.9797	10 59 52.0	13.983	8	12 28 9.96	1.8063	0 26 25.8	14.256
9	11 0 4.86	1.9740	10 45 52.1	14.012	9	12 29 58.29	1.8048	0 40 40.7	14.241
10	11 2 3.13	1.9684	10 31 50.5	14.041	10	12 31 46.53	1.8033	0 54 54.7	14.225
11	11 4 1.07	1.9630	10 17 47.2	14.068	11	12 33 34.69	1.8020	1 9 7.7	14.209
12	11 5 58.69	1.9577	10 3 42.3	14.094	12	12 35 22.77	1.8008	1 23 19.8	14.192
13	11 7 55.99	1.9523	9 49 35.9	14.118	13	12 37 10.78	1.7996	1 37 30.8	14.174
14	11 9 52.97	1.9470	9 35 28.1	14.142	14	12 38 58.72	1.7985	1 51 40.7	14.155
15	11 11 49.63	1.9418	9 21 18.8	14.166	15	12 40 46.60	1.7975	2 5 49.4	14.136
16	11 13 45.99	1.9368	9 7 8.2	14.187	16	12 42 34.42	1.7965	2 19 57.0	14.117
17	11 15 42.05	1.9318	8 52 56.4	14.207	17	12 44 22.18	1.7956	2 34 3.4	14.096
18	11 17 37.81	1.9269	8 38 43.4	14.226	18	12 46 9.89	1.7948	2 48 8.5	14.074
19	11 19 33.28	1.9222	8 24 29.3	14.244	19	12 47 57.56	1.7942	3 2 12.3	14.052
20	11 21 28.47	1.9175	8 10 14.1	14.261	20	12 49 45.19	1.7935	3 16 14.7	14.029
21	11 23 23.38	1.9129	7 55 58.0	14.277	21	12 51 32.78	1.7929	3 30 15.8	14.006
22	11 25 18.02	1.9084	7 41 40.9	14.292	22	12 53 20.34	1.7925	3 44 15.5	13.982
23	11 27 12.39	1.9039	7 27 22.9	14.306	23	12 55 7.88	1.7921	3 58 13.7	13.957
24	11 29 6.49	1.8995	N. 7 13 4.2	14.318	24	12 56 55.40	1.7918	S. 4 12 10.4	13.932

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 9.					WEDNESDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 56 55.40	1.7918	S. 4 12 10.4	13.932	0	14 24 0.31	1.8637	S. 14 39 23.0	11.948
1	12 58 42.90	1.7916	4 26 5.6	13.906	1	14 25 52.23	1.8668	14 51 18.2	11.890
2	13 0 30.39	1.7915	4 39 59.2	13.879	2	14 27 44.33	1.8699	15 3 9.8	11.831
3	13 2 17.88	1.7914	4 53 51.1	13.852	3	14 29 36.62	1.8732	15 14 57.9	11.772
4	13 4 5.36	1.7914	5 7 41.4	13.824	4	14 31 29.11	1.8766	15 26 42.4	11.712
5	13 5 52.85	1.7915	5 21 30.0	13.796	5	14 33 21.81	1.8800	15 38 23.3	11.651
6	13 7 40.34	1.7917	5 35 16.9	13.767	6	14 35 14.71	1.8834	15 50 0.5	11.589
7	13 9 27.85	1.7919	5 49 2.0	13.737	7	14 37 7.82	1.8869	16 1 34.0	11.527
8	13 11 15.37	1.7922	6 2 45.3	13.706	8	14 39 1.14	1.8904	16 13 3.7	11.464
9	13 13 2.91	1.7926	6 16 26.7	13.674	9	14 40 54.67	1.8940	16 24 29.7	11.401
10	13 14 50.48	1.7931	6 30 6.2	13.643	10	14 42 48.42	1.8976	16 35 51.8	11.335
11	13 16 38.08	1.7937	6 43 43.8	13.611	11	14 44 42.39	1.9013	16 47 9.9	11.269
12	13 18 25.72	1.7943	6 57 19.5	13.577	12	14 46 36.58	1.9051	16 58 24.1	11.203
13	13 20 13.40	1.7950	7 10 53.1	13.543	13	14 48 31.00	1.9089	17 9 34.3	11.136
14	13 22 1.12	1.7957	7 24 24.7	13.509	14	14 50 25.65	1.9128	17 20 40.4	11.069
15	13 23 48.88	1.7965	7 37 54.2	13.474	15	14 52 20.54	1.9167	17 31 42.5	11.001
16	13 25 36.70	1.7975	7 51 21.6	13.438	16	14 54 15.66	1.9207	17 42 40.5	10.932
17	13 27 24.58	1.7985	8 4 46.8	13.402	17	14 56 11.02	1.9246	17 53 34.3	10.861
18	13 29 12.52	1.7995	8 18 9.9	13.366	18	14 58 6.61	1.9286	18 4 23.8	10.790
19	13 31 0.52	1.8007	8 31 30.7	13.328	19	15 0 2.45	1.9327	18 15 9.1	10.719
20	13 32 48.60	1.8019	8 44 49.2	13.289	20	15 1 58.54	1.9369	18 25 50.1	10.646
21	13 34 36.75	1.8032	8 58 5.4	13.250	21	15 3 54.88	1.9411	18 36 26.6	10.575
22	13 36 24.98	1.8045	9 11 19.2	13.211	22	15 5 51.47	1.9453	18 46 58.7	10.498
23	13 38 13.29	1.8059	S. 9 24 30.7	13.172	23	15 7 48.32	1.9496	S. 18 57 26.4	10.422
	TUESDAY 10.					THURSDAY 12.			
0	13 40 1.69	1.8074	S. 9 37 39.8	13.131	0	15 9 45.42	1.9539	S. 19 7 49.5	10.347
1	13 41 50.18	1.8090	9 50 46.4	13.089	1	15 11 42.78	1.9583	19 18 8.0	10.271
2	13 43 38.77	1.8107	10 3 50.4	13.046	2	15 13 40.41	1.9627	19 28 22.0	10.194
3	13 45 27.46	1.8124	10 16 51.9	13.003	3	15 15 38.30	1.9671	19 38 31.3	10.115
4	13 47 16.26	1.8142	10 29 50.8	12.960	4	15 17 36.46	1.9716	19 48 35.8	10.035
5	13 49 5.16	1.8159	10 42 47.1	12.916	5	15 19 34.89	1.9761	19 58 35.5	9.956
6	13 50 54.17	1.8178	10 55 40.7	12.871	6	15 21 33.59	1.9807	20 8 30.5	9.876
7	13 52 43.30	1.8198	11 8 31.6	12.825	7	15 23 32.57	1.9852	20 18 20.6	9.793
8	13 54 32.55	1.8219	11 21 19.7	12.779	8	15 25 31.82	1.9897	20 28 5.7	9.710
9	13 56 21.93	1.8241	11 34 5.1	12.732	9	15 27 31.34	1.9943	20 37 45.8	9.626
10	13 58 11.44	1.8262	11 46 47.6	12.684	10	15 29 31.14	1.9991	20 47 20.8	9.542
11	14 0 1.08	1.8284	11 59 27.2	12.637	11	15 31 31.23	2.0038	20 56 50.8	9.457
12	14 1 50.85	1.8307	12 12 4.0	12.588	12	15 33 31.60	2.0086	21 6 15.7	9.372
13	14 3 40.76	1.8331	12 24 37.8	12.538	13	15 35 32.26	2.0133	21 15 35.4	9.284
14	14 5 30.82	1.8356	12 37 8.6	12.488	14	15 37 33.20	2.0181	21 24 49.8	9.196
15	14 7 21.04	1.8382	12 49 36.4	12.437	15	15 39 34.43	2.0229	21 33 58.9	9.107
16	14 9 11.41	1.8408	13 2 1.1	12.386	16	15 41 35.95	2.0277	21 43 2.7	9.017
17	14 11 1.94	1.8434	13 14 22.7	12.333	17	15 43 37.76	2.0326	21 52 1.0	8.927
18	14 12 52.62	1.8461	13 26 41.1	12.280	18	15 45 39.86	2.0375	22 0 53.9	8.836
19	14 14 43.47	1.8489	13 38 56.3	12.227	19	15 47 42.26	2.0424	22 9 41.3	8.743
20	14 16 34.49	1.8517	13 51 8.3	12.172	20	15 49 44.95	2.0473	22 18 23.1	8.650
21	14 18 25.68	1.8546	14 3 17.0	12.117	21	15 51 47.93	2.0522	22 26 59.3	8.556
22	14 20 17.04	1.8575	14 15 22.4	12.062	22	15 53 51.21	2.0572	22 35 29.8	8.461
23	14 22 8.58	1.8606	14 27 24.4	12.005	23	15 55 54.79	2.0621	22 43 54.6	8.365
24	14 24 0.31	1.8637	S. 14 39 23.0	11.918	24	15 57 58.66	2.0670	S. 22 52 13.6	8.268

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 13.					**SUNDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 57 58.66	2.0670	S.22 52 13.6	8.268	0	17 42 41.97	2.2835	S.27 20 16.4	2.571
1	16 0 2.83	2.0720	23 0 26.7	8.170	1	17 44 59.08	2.2867	27 22 46.6	2.433
2	16 2 7.30	2.0769	23 8 34.0	8.072	2	17 47 16.38	2.2899	27 25 8.4	2.294
3	16 4 12.06	2.0818	23 16 35.3	7.972	3	17 49 33.87	2.2931	27 27 21.9	2.155
4	16 6 17.12	2.0869	23 24 30.6	7.872	4	17 51 51.55	2.2962	27 29 27.0	2.015
5	16 8 22.49	2.0920	23 32 19.9	7.770	5	17 54 9.41	2.2992	27 31 23.7	1.874
6	16 10 28.16	2.0970	23 40 3.0	7.667	6	17 56 27.45	2.3021	27 33 11.9	1.733
7	16 12 34.13	2.1019	23 47 39.9	7.564	7	17 58 45.66	2.3049	27 34 51.7	1.592
8	16 14 40.39	2.1068	23 55 10.6	7.460	8	18 1 4.03	2.3076	27 36 22.9	1.449
9	16 16 46.95	2.1118	24 2 35.1	7.355	9	18 3 22.57	2.3102	27 37 45.6	1.306
10	16 18 53.81	2.1168	24 9 53.2	7.248	10	18 5 41.26	2.3128	27 38 59.7	1.163
11	16 21 0.97	2.1218	24 17 4.9	7.141	11	18 8 0.10	2.3153	27 40 5.2	1.019
12	16 23 8.43	2.1268	24 24 10.1	7.033	12	18 10 19.09	2.3177	27 41 2.0	0.874
13	16 25 16.19	2.1317	24 31 8.8	6.924	13	18 12 38.22	2.3199	27 41 50.1	0.730
14	16 27 24.24	2.1367	24 38 1.0	6.815	14	18 14 57.48	2.3220	27 42 29.6	0.586
15	16 29 32.59	2.1416	24 44 46.6	6.704	15	18 17 16.86	2.3240	27 43 0.4	0.440
16	16 31 41.23	2.1465	24 51 25.5	6.592	16	18 19 36.36	2.3260	27 43 22.4	0.294
17	16 33 50.17	2.1514	24 57 57.7	6.480	17	18 21 55.98	2.3280	27 43 35.7	0.148
18	16 35 59.40	2.1562	25 4 23.1	6.367	18	18 24 15.72	2.3298	27 43 40.2	−0.002
19	16 38 8.92	2.1611	25 10 41.7	6.253	19	18 26 35.56	2.3315	27 43 35.9	+0.145
20	16 40 18.73	2.1659	25 16 53.4	6.138	20	18 28 55.50	2.3331	27 43 22.8	0.293
21	16 42 28.83	2.1707	25 22 58.2	6.022	21	18 31 15.53	2.3345	27 43 0.8	0.441
22	16 44 39.21	2.1754	25 28 56.0	5.904	22	18 33 35.64	2.3359	27 42 29.9	0.588
23	16 46 49.88	2.1802	S.25 34 46.7	5.786	23	18 35 55.84	2.3372	S.27 41 50.2	0.736
	SATURDAY 14.					**MONDAY 16.**			
0	16 49 0.84	2.1850	S.25 40 30.3	5.667	0	18 38 16.11	2.3384	S.27 41 1.6	0.884
1	16 51 12.08	2.1897	25 46 6.7	5.547	1	18 40 36.45	2.3395	27 40 4.1	1.033
2	16 53 23.60	2.1943	25 51 36.0	5.427	2	18 42 56.85	2.3405	27 38 57.7	1.182
3	16 55 35.39	2.1988	25 56 58.0	5.306	3	18 45 17.31	2.3414	27 37 42.3	1.331
4	16 57 47.46	2.2034	26 2 12.7	5.184	4	18 47 37.82	2.3422	27 36 18.0	1.479
5	16 59 59.80	2.2079	26 7 20.0	5.061	5	18 49 58.37	2.3428	27 34 44.8	1.628
6	17 2 12.41	2.2124	26 12 20.0	4.937	6	18 52 18.96	2.3434	27 33 2.6	1.777
7	17 4 25.29	2.2168	26 17 12.5	4.812	7	18 54 39.58	2.3439	27 31 11.5	1.927
8	17 6 38.43	2.2212	26 21 57.4	4.686	8	18 57 0.23	2.3443	27 29 11.4	2.077
9	17 8 51.83	2.2255	26 26 34.8	4.560	9	18 59 20.90	2.3446	27 27 2.3	2.226
10	17 11 5.49	2.2298	26 31 4.6	4.432	10	19 1 41.58	2.3447	27 24 44.3	2.375
11	17 13 19.41	2.2341	26 35 26.7	4.304	11	19 4 2.27	2.3448	27 22 17.3	2.524
12	17 15 33.58	2.2382	26 39 41.1	4.176	12	19 6 22.96	2.3448	27 19 41.4	2.673
13	17 17 48.00	2.2423	26 43 47.8	4.047	13	19 8 43.64	2.3447	27 16 56.5	2.822
14	17 20 2.66	2.2464	26 47 46.7	3.916	14	19 11 4.32	2.3445	27 14 2.7	2.972
15	17 22 17.57	2.2505	26 51 37.7	3.784	15	19 13 24.98	2.3442	27 10 59.9	3.121
16	17 24 32.72	2.2544	26 55 20.8	3.652	16	19 15 45.62	2.3437	27 7 48.2	3.270
17	17 26 48.10	2.2582	26 58 56.0	3.520	17	19 18 6.23	2.3432	27 4 27.5	3.419
18	17 29 3.70	2.2619	27 2 23.2	3.387	18	19 20 26.80	2.3425	27 0 57.9	3.568
19	17 31 19.53	2.2657	27 5 42.4	3.252	19	19 22 47.33	2.3418	26 57 19.4	3.716
20	17 33 35.59	2.2695	27 8 53.5	3.117	20	19 25 7.82	2.3410	26 53 32.0	3.864
21	17 35 51.87	2.2731	27 11 56.5	2.982	21	19 27 28.25	2.3401	26 49 35.7	4.012
22	17 38 8.36	2.2766	27 14 51.4	2.846	22	19 29 48.63	2.3391	26 45 30.6	4.159
23	17 40 25.06	2.2801	27 17 38.0	2.708	23	19 32 8.95	2.3380	26 41 16.6	4.307
24	17 42 41.97	2.2835	S.27 20 16.4	2.571	24	19 34 29.19	2.3368	S.26 36 53.7	4.455

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 17.					THURSDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	19 34 29.19	2.3368	S.26 36 53.7	4.455	0	21 23 53.59	2.2022	S.20 23 46.6	10.802
1	19 36 49.36	2.3355	26 32 22.0	4.602	1	21 26 5.61	2.1986	20 12 55.1	10.913
2	19 39 9.45	2.3342	26 27 41.5	4.748	2	21 28 17.42	2.1949	20 1 57.0	11.023
3	19 41 29.46	2.3327	26 22 52.2	4.894	3	21 30 29.00	2.1912	19 50 52.3	11.132
4	19 43 49.38	2.3312	26 17 54.2	5.040	4	21 32 40.36	2.1876	19 39 41.1	11.240
5	19 46 9.20	2.3296	26 12 47.4	5.186	5	21 34 51.51	2.1840	19 28 23.5	11.347
6	19 48 28.93	2.3279	26 7 31.9	5.331	6	21 37 2.44	2.1803	19 16 59.5	11.452
7	19 50 48.55	2.3260	26 2 7.7	5.475	7	21 39 13.15	2.1767	19 5 29.2	11.557
8	19 53 8.05	2.3241	25 56 34.9	5.619	8	21 41 23.64	2.1731	18 53 52.7	11.660
9	19 55 27.44	2.3222	25 50 53.4	5.763	9	21 43 33.92	2.1695	18 42 10.0	11.762
10	19 57 46.71	2.3201	25 45 3.3	5.906	10	21 45 43.98	2.1658	18 30 21.2	11.864
11	20 0 5.85	2.3180	25 39 4.7	6.049	11	21 47 53.82	2.1622	18 18 26.3	11.964
12	20 2 24.87	2.3158	25 32 57.5	6.191	12	21 50 3.44	2.1586	18 6 25.5	12.062
13	20 4 43.75	2.3135	25 26 41.8	6.332	13	21 52 12.85	2.1551	17 54 18.8	12.160
14	20 7 2.49	2.3112	25 20 17.6	6.473	14	21 54 22.05	2.1516	17 42 6.3	12.257
15	20 9 21.09	2.3088	25 13 45.0	6.613	15	21 56 31.04	2.1480	17 29 48.0	12.352
16	20 11 39.55	2.3063	25 7 4.0	6.753	16	21 58 39.81	2.1445	17 17 24.0	12.447
17	20 13 57.85	2.3038	25 0 14.7	6.892	17	22 0 48.38	2.1411	17 4 54.4	12.540
18	20 16 16.00	2.3012	24 53 17.0	7.031	18	22 2 56.74	2.1376	16 52 19.2	12.632
19	20 18 33.99	2.2985	24 46 11.0	7.168	19	22 5 4.89	2.1342	16 39 38.5	12.723
20	20 20 51.82	2.2957	24 38 56.8	7.305	20	22 7 12.84	2.1308	16 26 52.4	12.812
21	20 23 9.48	2.2929	24 31 34.4	7.441	21	22 9 20.59	2.1275	16 14 1.0	12.901
22	20 25 26.97	2.2901	24 24 3.9	7.577	22	22 11 28.14	2.1242	16 1 4.3	12.988
23	20 27 44.29	2.2872	S.24 16 25.2	7.712	23	22 13 35.49	2.1208	S.15 48 2.4	13.074
	WEDNESDAY 18.					FRIDAY 20.			
0	20 30 1.44	2.2843	S.24 8 38.4	7.846	0	22 15 42.64	2.1176	S.15 34 55.4	13.159
1	20 32 18.41	2.2812	24 0 43.6	7.979	1	22 17 49.60	2.1144	15 21 43.3	13.243
2	20 34 35.19	2.2781	23 52 40.9	8.112	2	22 19 56.37	2.1112	15 8 26.2	13.326
3	20 36 51.78	2.2750	23 44 30.2	8.244	3	22 22 2.95	2.1081	14 55 4.2	13.407
4	20 39 8.19	2.2719	23 36 11.6	8.375	4	22 24 9.34	2.1049	14 41 37.3	13.487
5	20 41 24.41	2.2687	23 27 45.2	8.505	5	22 26 15.54	2.1018	14 28 5.7	13.566
6	20 43 40.43	2.2654	23 19 11.0	8.634	6	22 28 21.56	2.0988	14 14 29.4	13.644
7	20 45 56.26	2.2621	23 10 29.1	8.763	7	22 30 27.40	2.0959	14 0 48.4	13.722
8	20 48 11.89	2.2588	23 1 39.5	8.891	8	22 32 33.07	2.0930	13 47 2.8	13.797
9	20 50 27.32	2.2555	22 52 42.2	9.017	9	22 34 38.56	2.0901	13 33 12.8	13.870
10	20 52 42.55	2.2521	22 43 37.4	9.142	10	22 36 43.88	2.0872	13 19 18.4	13.943
11	20 54 57.57	2.2486	22 34 25.1	9.267	11	22 38 49.03	2.0845	13 5 19.6	14.016
12	20 57 12.38	2.2451	22 25 5.3	9.392	12	22 40 54.02	2.0818	12 51 16.5	14.087
13	20 59 26.98	2.2417	22 15 38.1	9.515	13	22 42 58.85	2.0792	12 37 9.2	14.156
14	21 1 41.38	2.2382	22 6 3.5	9.637	14	22 45 3.52	2.0765	12 22 57.8	14.223
15	21 3 55.57	2.2347	21 56 21.7	9.757	15	22 47 8.03	2.0739	12 8 42.4	14.290
16	21 6 9.55	2.2312	21 46 32.6	9.877	16	22 49 12.39	2.0714	11 54 23.0	14.357
17	21 8 23.31	2.2276	21 36 36.4	9.997	17	22 51 16.60	2.0689	11 39 59.6	14.422
18	21 10 36.86	2.2240	21 26 33.0	10.116	18	22 53 20.66	2.0665	11 25 32.4	14.485
19	21 12 50.19	2.2204	21 16 22.5	10.233	19	22 55 24.58	2.0642	11 11 1.4	14.547
20	21 15 3.31	2.2168	21 6 5.0	10.348	20	22 57 28.36	2.0619	10 56 26.7	14.607
21	21 17 16.21	2.2132	20 55 40.7	10.463	21	22 59 32.01	2.0597	10 41 48.5	14.667
22	21 19 28.89	2.2095	20 45 9.5	10.578	22	23 1 35.53	2.0576	10 27 6.7	14.726
23	21 21 41.35	2.2058	20 34 31.4	10.691	23	23 3 38.92	2.0554	10 12 21.4	14.783
24	21 23 53.59	2.2022	S.20 23 46.6	10.802	24	23 5 42.18	2.0533	S. 9 57 32.8	14.839

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 21.			
	h m s	s	° ′ ″	″
0	23 5 42.18	2.0533	S. 9 57 32.8	14.839
1	23 7 45.32	2.0513	9 42 40.8	14.894
2	23 9 48.35	2.0495	9 27 45.5	14.947
3	23 11 51.27	2.0477	9 12 47.1	14.999
4	23 13 54.08	2.0460	8 57 45.6	15.051
5	23 15 56.79	2.0442	8 42 41.0	15.101
6	23 17 59.39	2.0425	8 27 33.5	15.149
7	23 20 1.89	2.0410	8 12 23.1	15.197
8	23 22 4.31	2.0396	7 57 9.9	15.243
9	23 24 6.64	2.0382	7 41 53.9	15.288
10	23 26 8.89	2.0368	7 26 35.3	15.332
11	23 28 11.06	2.0355	7 11 14.1	15.375
12	23 30 13.15	2.0343	6 55 50.3	15.417
13	23 32 15.17	2.0332	6 40 24.1	15.456
14	23 34 17.13	2.0321	6 24 55.6	15.495
15	23 36 19.02	2.0311	6 9 24.7	15.533
16	23 38 20.86	2.0302	5 53 51.6	15.569
17	23 40 22.65	2.0293	5 38 16.4	15.604
18	23 42 24.38	2.0285	5 22 39.1	15.638
19	23 44 26.07	2.0279	5 6 59.8	15.671
20	23 46 27.73	2.0273	4 51 18.6	15.702
21	23 48 29.35	2.0268	4 35 35.6	15.732
22	23 50 30.94	2.0263	4 19 50.8	15.761
23	23 52 32.51	2.0259	S. 4 4 4.3	15.789
	SUNDAY 22.			
0	23 54 34.05	2.0256	S. 3 48 16.1	15.816
1	23 56 35.58	2.0254	3 32 26.4	15.841
2	23 58 37.10	2.0253	3 16 35.2	15.864
3	0 0 38.62	2.0252	3 0 42.7	15.887
4	0 2 40.13	2.0252	2 44 48.8	15.909
5	0 4 41.65	2.0254	2 28 53.6	15.929
6	0 6 43.18	2.0256	2 12 57.3	15.948
7	0 8 44.72	2.0259	1 56 59.9	15.966
8	0 10 46.29	2.0263	1 41 1.4	15.982
9	0 12 47.88	2.0267	1 25 2.0	15.997
10	0 14 49.50	2.0272	1 9 1.8	16.011
11	0 16 51.15	2.0278	0 53 0.7	16.024
12	0 18 52.84	2.0285	0 36 58.9	16.035
13	0 20 54.57	2.0293	0 20 56.5	16.045
14	0 22 56.36	2.0302	S. 0 4 53.5	16.054
15	0 24 58.20	2.0312	N. 0 11 10.0	16.062
16	0 27 0.10	2.0323	0 27 13.9	16.068
17	0 29 2.07	2.0334	0 43 18.1	16.072
18	0 31 4.11	2.0346	0 59 22.5	16.075
19	0 33 6.22	2.0359	1 15 27.1	16.077
20	0 35 8.42	2.0373	1 31 31.8	16.079
21	0 37 10.70	2.0388	1 47 36.6	16.079
22	0 39 13.07	2.0403	2 3 41.3	16.077
23	0 41 15.54	2.0419	2 19 45.9	16.074
24	0 43 18.10	2.0436	N. 2 35 50.2	16.069

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 23.			
	h m s	s	° ′ ″	″
0	0 43 18.10	2.0436	N. 2 35 50.2	16.069
1	0 45 20.77	2.0455	2 51 54.2	16.064
2	0 47 23.56	2.0475	3 7 57.9	16.057
3	0 49 26.47	2.0495	3 24 1.1	16.049
4	0 51 29.50	2.0516	3 40 3.8	16.039
5	0 53 32.66	2.0538	3 56 5.8	16.028
6	0 55 35.95	2.0560	4 12 7.2	16.017
7	0 57 39.38	2.0584	4 28 7.9	16.003
8	0 59 42.96	2.0608	4 44 7.6	15.987
9	1 1 46.68	2.0633	5 0 6.3	15.970
10	1 3 50.56	2.0660	5 16 4.0	15.953
11	1 5 54.60	2.0687	5 32 0.7	15.935
12	1 7 58.81	2.0716	5 47 56.2	15.914
13	1 10 3.19	2.0745	6 3 50.4	15.892
14	1 12 7.75	2.0774	6 19 43.3	15.869
15	1 14 12.48	2.0804	6 35 34.7	15.843
16	1 16 17.40	2.0836	6 51 24.5	15.817
17	1 18 22.51	2.0868	7 7 12.8	15.791
18	1 20 27.82	2.0902	7 22 59.4	15.762
19	1 22 33.33	2.0936	7 38 44.2	15.731
20	1 24 39.05	2.0971	7 54 27.1	15.699
21	1 26 44.98	2.1007	8 10 8.1	15.667
22	1 28 51.13	2.1044	8 25 47.1	15.632
23	1 30 57.51	2.1082	N. 8 41 23.9	15.595
	TUESDAY 24.			
0	1 33 4.11	2.1120	N. 8 56 58.5	15.557
1	1 35 10.95	2.1160	9 12 30.8	15.518
2	1 37 18.03	2.1199	9 28 0.7	15.478
3	1 39 25.34	2.1239	9 43 28.2	15.437
4	1 41 32.90	2.1282	9 58 53.1	15.393
5	1 43 40.72	2.1325	10 14 15.3	15.348
6	1 45 48.80	2.1368	10 29 34.8	15.302
7	1 47 57.14	2.1412	10 44 51.5	15.253
8	1 50 5.75	2.1457	11 0 5.2	15.203
9	1 52 14.63	2.1503	11 15 15.9	15.153
10	1 54 23.79	2.1550	11 30 23.5	15.101
11	1 56 33.23	2.1597	11 45 28.0	15.047
12	1 58 42.96	2.1646	12 0 29.1	14.990
13	2 0 52.98	2.1695	12 15 26.8	14.933
14	2 3 3.30	2.1745	12 30 21.1	14.875
15	2 5 13.92	2.1795	12 45 11.8	14.814
16	2 7 24.84	2.1847	12 59 58.8	14.752
17	2 9 36.08	2.1899	13 14 42.0	14.688
18	2 11 47.63	2.1952	13 29 21.4	14.623
19	2 13 59.50	2.2005	13 43 56.8	14.557
20	2 16 11.69	2.2059	13 58 28.2	14.488
21	2 18 24.21	2.2114	14 12 55.4	14.418
22	2 20 37.06	2.2170	14 27 18.4	14.347
23	2 22 50.25	2.2226	14 41 37.0	14.273
24	2 25 3.78	2.2283	N. 14 55 51.2	14.198

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 25.					FRIDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 25 3.78	2.2283	N.14 55 51.2	14.198	0	4 19 23.21	2.5394	N.24 18 47.1	8.598
1	2 27 17.65	2.2341	15 10 0.8	14.122	1	4 21 55.76	2.5456	24 27 18.2	8.439
2	2 29 31.87	2.2399	15 24 5.8	14.044	2	4 24 28.68	2.5517	24 35 39.8	8.280
3	2 31 46.44	2.2458	15 38 6.1	13.964	3	4 27 1.97	2.5577	24 43 51.8	8.119
4	2 34 1.37	2.2518	15 52 1.5	13.882	4	4 29 35.61	2.5636	24 51 54.1	7.957
5	2 36 16.66	2.2578	16 5 52.0	13.799	5	4 32 9.60	2.5694	24 59 46.6	7.793
6	2 38 32.30	2.2638	16 19 37.4	13.714	6	4 34 43.94	2.5752	25 7 29.2	7.628
7	2 40 48.31	2.2699	16 33 17.7	13.628	7	4 37 18.62	2.5808	25 15 1.9	7.461
8	2 43 4.69	2.2761	16 46 52.8	13.540	8	4 39 53.64	2.5863	25 22 24.5	7.292
9	2 45 21.45	2.2824	17 0 22.5	13.450	9	4 42 28.98	2.5918	25 29 36.9	7.122
10	2 47 38.58	2.2886	17 13 46.8	13.358	10	4 45 4.65	2.5972	25 36 39.1	6.952
11	2 49 56.09	2.2949	17 27 5.5	13.264	11	4 47 40.64	2.6023	25 43 31.1	6.780
12	2 52 13.97	2.3013	17 40 18.5	13.169	12	4 50 16.93	2.6074	25 50 12.7	6.606
13	2 54 32.24	2.3078	17 53 25.8	13.072	13	4 52 53.53	2.6125	25 56 43.8	6.431
14	2 56 50.90	2.3142	18 6 27.2	12.974	14	4 55 30.43	2.6174	26 3 4.4	6.255
15	2 59 9.94	2.3206	18 19 22.7	12.874	15	4 58 7.62	2.6222	26 9 14.4	6.077
16	3 1 29.37	2.3272	18 32 12.1	12.772	16	5 0 45.10	2.6269	26 15 13.7	5.899
17	3 3 49.20	2.3338	18 44 55.3	12.668	17	5 3 22.85	2.6314	26 21 2.3	5.719
18	3 6 9.43	2.3404	18 57 32.3	12.563	18	5 6 0.87	2.6358	26 26 40.0	5.538
19	3 8 30.05	2.3470	19 10 2.9	12.456	19	5 8 39.15	2.6401	26 32 6.8	5.356
20	3 10 51.07	2.3537	19 22 27.0	12.347	20	5 11 17.68	2.6443	26 37 22.7	5.173
21	3 13 12.49	2.3603	19 34 44.5	12.236	21	5 13 56.46	2.6483	26 42 27.6	4.989
22	3 15 34.31	2.3670	19 46 55.3	12.123	22	5 16 35.47	2.6521	26 47 21.4	4.804
23	3 17 56.53	2.3737	N.19 58 59.3	12.010	23	5 19 14.71	2.6558	N.26 52 4.0	4.618
	THURSDAY 26.					SATURDAY 28.			
0	3 20 19.16	2.3605	N.20 10 56.5	11.894	0	5 21 54.16	2.6593	N.26 56 35.5	4.432
1	3 22 42.19	2.3873	20 22 46.6	11.776	1	5 24 33.82	2.6627	27 0 55.8	4.243
2	3 25 5.63	2.3941	20 34 29.6	11.657	2	5 27 13.68	2.6659	27 5 4.7	4.054
3	3 27 29.48	2.4008	20 46 5.4	11.536	3	5 29 53.73	2.6690	27 9 2.3	3.865
4	3 29 53.73	2.4076	20 57 33.9	11.413	4	5 32 33.96	2.6719	27 12 48.5	3.675
5	3 32 18.39	2.4144	21 8 54.9	11.288	5	5 35 14.36	2.6747	27 16 23.3	3.484
6	3 34 43.46	2.4212	21 20 8.4	11.162	6	5 37 54.92	2.6773	27 19 46.6	3.293
7	3 37 8.93	2.4279	21 31 14.3	11.033	7	5 40 35.63	2.6797	27 22 58.4	3.101
8	3 39 34.81	2.4347	21 42 12.4	10.903	8	5 43 16.48	2.6818	27 25 58.7	2.908
9	3 42 1.10	2.4415	21 53 2.7	10.772	9	5 45 57.45	2.6838	27 28 47.4	2.715
10	3 44 27.79	2.4482	22 3 45.1	10.639	10	5 48 38.54	2.6858	27 31 24.5	2.521
11	3 46 54.89	2.4550	22 14 19.4	10.503	11	5 51 19.75	2.6876	27 33 49.9	2.327
12	3 49 22.39	2.4617	22 24 45.5	10.367	12	5 54 1.05	2.6891	27 36 3.7	2.132
13	3 51 50.29	2.4684	22 35 3.4	10.228	13	5 56 42.44	2.6904	27 38 5.8	1.937
14	3 54 18.59	2.4751	22 45 12.9	10.088	14	5 59 23.90	2.6916	27 39 56.2	1.742
15	3 56 47.30	2.4817	22 55 14.0	9.947	15	6 2 5.43	2.6926	27 41 34.8	1.546
16	3 59 16.40	2.4883	23 5 6.6	9.804	16	6 4 47.01	2.6933	27 43 1.7	1.350
17	4 1 45.90	2.4949	23 14 50.5	9.658	17	6 7 28.63	2.6940	27 44 16.8	1.153
18	4 4 15.79	2.5014	23 24 25.6	9.512	18	6 10 10.29	2.6945	27 45 20.1	0.957
19	4 6 46.07	2.5079	23 33 51.9	9.363	19	6 12 51.97	2.6947	27 46 11.6	0.761
20	4 9 16.74	2.5143	23 43 9.2	9.213	20	6 15 33.65	2.6947	27 46 51.4	0.565
21	4 11 47.79	2.5207	23 52 17.5	9.062	21	6 18 15.33	2.6946	27 47 19.4	0.368
22	4 14 19.22	2.5270	24 1 16.6	8.908	22	6 20 57.00	2.6942	27 47 35.6	+ 0.172
23	4 16 51.03	2.5332	24 10 6.5	8.754	23	6 23 38.64	2.6937	27 47 40.0	- 0.025
24	4 19 23.21	2.5394	N.24 18 47.1	8.598	24	6 26 20.24	2.6929	N.27 47 32.6	0.222

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	6 26 20.24	2.6929	N.27 47 32.6	0.222
1	6 29 1.79	2.6921	27 47 13.4	0.418
2	6 31 43.29	2.6911	27 46 42.5	0.613
3	6 34 24.72	2.6898	27 45 59.9	0.808
4	6 37 6.06	2.6883	27 45 5.5	1.004
5	6 39 47.31	2.6867	27 43 59.4	1.198
6	6 42 28.46	2.6848	27 42 41.7	1.393
7	6 45 9.49	2.6828	27 41 12.3	1.587
8	6 47 50.40	2.6807	27 39 31.3	1.780
9	6 50 31.17	2.6783	27 37 38.7	1.973
10	6 53 11.79	2.6757	27 35 34.5	2.166
11	6 55 52.25	2.6729	27 33 18.8	2.357
12	6 58 32.54	2.6700	27 30 51.6	2.548
13	7 1 12.65	2.6671	27 28 13.0	2.738
14	7 3 52.57	2.6639	27 25 23.0	2.928
15	7 6 32.30	2.6604	27 22 21.6	3.118
16	7 9 11.81	2.6567	27 19 8.9	3.306
17	7 11 51.10	2.6529	27 15 44.9	3.492
18	7 14 30.16	2.6490	27 12 9.8	3.678
19	7 17 8.98	2.6449	27 8 23.5	3.864
20	7 19 47.55	2.6407	27 4 26.1	4.048
21	7 22 25.86	2.6363	27 0 17.8	4.230
22	7 25 3.90	2.6317	26 55 58.5	4.412
23	7 27 41.66	2.6269	N.26 51 28.3	4.593

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	7 30 19.13	2.6221	N.26 46 47.3	4.773
1	7 32 56.31	2.6171	26 41 55.5	4.952
2	7 35 33.18	2.6119	26 36 53.0	5.129
3	7 38 9.74	2.6067	26 31 40.0	5.304
4	7 40 45.98	2.6013	26 26 16.5	5.479
5	7 43 21.90	2.5958	26 20 42.5	5.654
6	7 45 57.48	2.5901	26 14 58.0	5.827
7	7 48 32.71	2.5844	26 9 3.3	5.997
8	7 51 7.60	2.5785	26 2 58.4	6.166
9	7 53 42.13	2.5724	25 56 43.4	6.333
10	7 56 16.29	2.5662	25 50 18.4	6.500
11	7 58 50.08	2.5600	25 43 43.4	6.666
12	8 1 23.49	2.5537	25 36 58.5	6.829
13	8 3 56.52	2.5472	25 30 3.9	6.991
14	8 6 29.16	2.5407	25 22 59.6	7.152
15	8 9 1.40	2.5340	25 15 45.7	7.311
16	8 11 33.24	2.5272	25 8 22.3	7.468
17	8 14 4.67	2.5204	25 0 49.5	7.623
18	8 16 35.69	2.5136	24 53 7.5	7.777
19	8 19 6.30	2.5066	24 45 16.3	7.930
20	8 21 36.48	2.4995	24 37 15.9	8.081
21	8 24 6.24	2.4921	24 29 6.6	8.229
22	8 26 35.57	2.4852	24 20 48.4	8.377
23	8 29 4.47	2.4780	24 12 21.4	8.523
24	8 31 32.93	2.4707	N.24 3 45.7	8.667

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 31 32.93	2.4707	N.24 3 45.7	8.667
1	8 34 0.95	2.4633	23 55 1.4	8.808
2	8 36 28.52	2.4558	23 46 8.7	8.948
3	8 38 55.65	2.4484	23 37 7.6	9.087
4	8 41 22.33	2.4409	23 27 58.2	9.224
5	8 43 48.56	2.4333	23 18 40.7	9.359
6	8 46 14.33	2.4257	23 9 15.1	9.493
7	8 48 39.64	2.4181	22 59 41.5	9.624
8	8 51 4.50	2.4105	22 50 0.2	9.752
9	8 53 28.90	2.4028	22 40 11.2	9.880
10	8 55 52.83	2.3950	22 30 14.6	10.007
11	8 58 16.30	2.3873	22 20 10.4	10.132
12	9 0 39.31	2.3796	22 9 58.8	10.254
13	9 3 1.85	2.3718	21 59 39.9	10.374
14	9 5 23.92	2.3640	21 49 13.9	10.492
15	9 7 45.53	2.3562	21 38 40.8	10.610
16	9 10 6.67	2.3484	21 28 0.7	10.725
17	9 12 27.34	2.3407	21 17 13.8	10.838
18	9 14 47.55	2.3329	21 6 20.2	10.949
19	9 17 7.29	2.3251	20 55 19.9	11.059
20	9 19 26.56	2.3172	20 44 13.1	11.167
21	9 21 45.36	2.3094	20 32 59.9	11.273
22	9 24 3.69	2.3017	20 21 40.3	11.377
23	9 26 21.56	2.2940	N.20 10 14.6	11.479

WEDNESDAY, FEBRUARY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 28 38.97	2.2863	N.19 58 42.8	11.580

PHASES OF THE MOON.

		d	h	m
○ Full Moon . .	Jan.	2	1	40.9
☾ Last Quarter		9	10	28.4
● New Moon		17	13	28.1
☽ First Quarter . . .		24	18	26.8
○ Full Moon		31	14	10.9

	d	h
☾ Apogee	11	19.0
☾ Perigee	27	13.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Pegasi	W.	93° 8′ 6″	2467	94° 50′ 5″	2474	96° 31′ 55″	2482	98° 13′ 34″	2491
	α Arietis	W.	50 29 12	2217	52 17 14	2217	54 5 16	2218	55 53 17	2219
	Regulus	E.	61 40 8	2126	59 49 48	2130	57 59 35	2136	56 9 31	2143
	SATURN	E.	105 31 10	2120	103 40 42	2125	101 50 21	2130	100 0 7	2136
2	α Arietis	W.	64 52 16	2243	66 39 40	2250	68 26 53	2258	70 13 54	2266
	Aldebaran	W.	34 35 36	2298	36 21 38	2298	38 7 41	2298	39 53 43	2300
	Regulus	E.	47 2 6	2187	45 13 19	2198	43 24 48	2209	41 36 34	2222
	SATURN	E.	90 51 33	2174	89 2 26	2184	87 13 34	2194	85 24 57	2204
	Spica	E.	101 2 15	2172	99 13 5	2180	97 24 8	2190	95 35 26	2201
3	α Arietis	W.	79 5 25	2322	80 50 53	2334	82 36 3	2348	84 20 53	2362
	Aldebaran	W.	48 42 23	2332	50 27 36	2342	52 12 34	2353	53 57 17	2364
	SATURN	E.	76 26 3	2264	74 39 11	2278	72 52 39	2292	71 6 27	2307
	Spica	E.	86 36 9	2262	84 49 13	2275	83 2 37	2289	81 16 22	2303
4	α Arietis	W.	92 59 51	2438	94 42 32	2455	96 24 49	2472	98 6 42	2489
	Aldebaran	W.	62 36 32	2429	64 19 25	2444	66 1 57	2459	67 44 8	2475
	SATURN	E.	62 20 53	2382	60 36 53	2399	58 53 17	2415	57 10 4	2432
	Spica	E.	72 30 29	2381	70 46 27	2397	69 2 48	2414	67 19 33	2431
5	Aldebaran	W.	76 9 28	2556	77 49 24	2573	79 28 56	2590	81 8 5	2607
	Pollux	W.	32 0 51	2516	33 41 42	2533	35 22 10	2550	37 2 14	2566
	SATURN	E.	48 39 59	2517	46 59 10	2535	45 18 46	2553	43 38 47	2570
	Spica	E.	58 49 22	2518	57 8 34	2535	55 28 10	2553	53 48 11	2572
	Antares	E.	104 41 22	2511	103 0 24	2528	101 19 50	2545	99 39 40	2564
6	Aldebaran	W.	89 17 58	2693	90 54 47	2710	92 31 13	2728	94 7 16	2745
	Pollux	W.	45 16 43	2652	46 54 27	2669	48 31 48	2686	50 8 47	2703
	SATURN	E.	35 24 48	2657	33 47 11	2675	32 9 57	2692	30 33 6	2709
	Spica	E.	45 34 27	2661	43 56 55	2680	42 19 48	2698	40 43 5	2715
	Antares	E.	91 24 54	2650	89 47 7	2668	88 9 44	2685	86 32 44	2701
	VENUS	E.	100 53 31	3098	99 25 19	3117	97 57 30	3136	96 30 4	3155
7	Pollux	W.	58 8 11	2783	59 43 1	2799	61 17 30	2814	62 51 40	2828
	Regulus	W.	21 55 9	2859	23 28 20	2866	25 1 23	2873	26 34 16	2881
	Spica	E.	32 45 21	2805	31 10 59	2821	29 36 59	2839	28 3 22	2857
	Antares	E.	78 33 12	2782	76 58 21	2798	75 23 51	2814	73 49 41	2828
	VENUS	E.	89 18 26	3245	87 53 10	3262	86 28 14	3279	85 3 38	3296
	SUN	E.	117 21 53	3165	115 55 2	3182	114 28 31	3198	113 2 20	3214
8	Pollux	W.	70 37 52	2897	72 10 15	2910	73 42 21	2922	75 14 12	2935
	Regulus	W.	34 15 48	2931	35 47 28	2941	37 18 55	2950	38 50 10	2961
	Antares	E.	66 3 29	2898	64 31 7	2910	62 59 1	2923	61 27 11	2935
	VENUS	E.	78 5 20	3373	76 42 33	3388	75 20 3	3401	73 57 48	3415
	SUN	E.	105 55 54	3288	104 31 28	3301	103 7 18	3314	101 43 23	3328
9	Pollux	W.	82 49 51	2987	84 20 20	2996	85 50 38	3005	87 20 45	3014
	Regulus	W.	46 23 22	3006	47 53 27	3015	49 23 21	3022	50 53 6	3030
	Antares	E.	53 51 37	2988	52 21 9	2997	50 50 53	3006	49 20 48	3015
	VENUS	E.	67 10 15	3476	65 49 24	3487	64 28 45	3497	63 8 18	3506
	SUN	E.	94 47 24	3385	93 24 50	3395	92 2 28	3405	90 40 17	3414

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XV^h.	P.L. of Diff.	XVIII^h.	P.L. of Diff.	XXI^h.	P.L. of Diff.
1	α Pegasi	W.	99° 55′ 0″	2502	101° 36′ 11″	2513	103° 17′ 6″	2527	104° 57′ 42″	2541
	α Arietis	W.	57 41 16	2222	59 29 11	2226	61 17 0	2231	63 4 42	2236
	Regulus	E.	54 19 38	2151	52 29 56	2159	50 40 26	2167	48 51 9	2176
	SATURN	E.	98 10 3	2143	96 20 9	2149	94 30 25	2157	92 40 53	2165
2	α Arietis	W.	72 0 43	2277	73 47 17	2287	75 33 36	2298	77 19 39	2309
	Aldebaran	W.	41 39 42	2304	43 25 35	2309	45 11 21	2315	46 56 58	2324
	Regulus	E.	39 48 39	2235	38 1 4	2249	36 13 49	2264	34 26 57	2280
	SATURN	E.	83 36 36	2215	81 48 31	2227	80 0 44	2239	78 13 14	2251
	Spica	E.	93 47 0	2212	91 58 50	2224	90 10 58	2236	88 23 24	2249
3	α Arietis	W.	86 5 23	2376	87 49 33	2391	89 33 21	2406	91 16 47	2422
	Aldebaran	W.	55 41 44	2375	57 25 54	2388	59 9 46	2401	60 53 19	2415
	SATURN	E.	69 20 37	2321	67 35 8	2336	65 50 1	2351	64 5 16	2366
	Spica	E.	79 30 27	2318	77 44 54	2333	75 59 43	2349	74 14 55	2364
4	α Arietis	W.	99 48 11	2507	101 29 15	2524	103 9 55	2542	104 50 10	2561
	Aldebaran	W.	69 25 57	2490	71 7 24	2507	72 48 28	2523	74 29 9	2539
	SATURN	E.	55 27 15	2449	53 44 50	2466	52 2 49	2483	50 21 12	2500
	Spica	E.	65 36 42	2448	63 54 15	2465	62 12 13	2482	60 30 35	2500
5	Aldebaran	W.	82 46 50	2624	84 25 12	2641	86 3 11	2659	87 40 46	2676
	Pollux	W.	38 41 55	2584	40 21 12	2601	42 0 6	2618	43 38 36	2635
	SATURN	E.	41 59 11	2588	40 20 0	2605	38 41 12	2623	37 2 48	2640
	Spica	E.	52 8 37	2590	50 29 28	2607	48 50 43	2626	47 12 23	2643
	Antares	E.	97 59 55	2581	96 20 34	2599	94 41 37	2616	93 3 4	2633
6	Aldebaran	W.	95 42 56	2762	97 18 14	2779	98 53 10	2795	100 27 44	2811
	Pollux	W.	51 45 23	2719	53 21 37	2735	54 57 30	2752	56 33 1	2768
	SATURN	E.	28 56 38	2725	27 20 32	2741	25 44 47	2758	24 9 24	2775
	Spica	E.	39 6 45	2733	37 30 49	2750	35 55 16	2769	34 20 7	2786
	Antares	E.	84 56 6	2718	83 19 50	2735	81 43 56	2750	80 8 23	2767
	VENUS	E.	95 3 1	3173	93 36 20	3192	92 10 1	3209	90 44 3	3227
7	Pollux	W.	64 25 31	2843	65 59 3	2857	67 32 17	2871	69 5 13	2884
	Regulus	W.	28 6 59	2891	29 39 30	2900	31 11 49	2910	32 43 55	2920
	Spica	E.	26 30 8	2876	24 57 18	2894	23 24 51	2912	21 52 48	2932
	Antares	E.	72 15 50	2843	70 42 18	2857	69 9 4	2871	67 36 8	2884
	VENUS	E.	83 39 22	3312	82 15 24	3328	80 51 45	3344	79 28 24	3358
	SUN	E.	111 36 27	3230	110 10 53	3244	108 45 36	3259	107 20 37	3273
8	Pollux	W.	76 45 47	2946	78 17 8	2956	79 48 16	2967	81 19 10	2977
	Regulus	W.	40 21 12	2970	41 52 2	2980	43 22 40	2969	44 53 7	2998
	Antares	E.	59 55 36	2946	58 24 16	2958	56 53 10	2968	55 22 17	2978
	VENUS	E.	72 35 49	3429	71 14 5	3441	69 52 35	3454	68 31 19	3464
	SUN	E.	100 19 44	3340	98 56 19	3352	97 33 8	3364	96 10 10	3374
9	Pollux	W.	88 50 41	3021	90 20 28	3028	91 50 6	3035	93 19 35	3041
	Regulus	W.	52 22 42	3037	53 52 9	3043	55 21 28	3050	56 50 39	3056
	Antares	E.	47 50 54	3022	46 21 9	3030	44 51 34	3037	43 22 7	3043
	VENUS	E.	61 48 1	3516	60 27 55	3525	59 7 58	3533	57 48 10	3541
	SUN	E.	89 18 16	3422	87 56 24	3431	86 34 42	3438	85 13 8	3446

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Pollux	W.	94° 48′ 57″	3047	96° 18′ 11″	3052	97° 47′ 19″	3057	99° 16′ 21″	3062
	Regulus	W.	58 19 43	3060	59 48 41	3066	61 17 32	3070	62 46 18	3074
	Antares	E.	41 52 48	3050	40 23 37	3056	38 54 33	3060	37 25 35	3065
	Venus	E.	56 28 31	3548	55 9 0	3555	53 49 36	3561	52 30 19	3566
	Sun	E.	83 51 43	3452	82 30 25	3457	81 9 13	3463	79 48 8	3468
11	Regulus	W.	70 9 6	3087	71 37 32	3089	73 5 55	3090	74 34 17	3090
	Saturn	W.	25 54 56	3082	27 23 28	3082	28 51 59	3084	30 20 28	3084
	Venus	E.	45 55 19	3589	44 36 33	3592	43 17 50	3595	41 59 10	3597
	Sun	E.	73 3 52	3485	71 43 11	3487	70 22 32	3488	69 1 55	3489
12	Regulus	W.	81 56 13	3085	83 24 41	3083	84 53 11	3081	86 21 44	3078
	Saturn	W.	37 42 58	3079	39 11 33	3078	40 40 10	3075	42 8 50	3072
	Spica	W.	27 55 2	3101	29 23 10	3097	30 51 23	3092	32 19 42	3088
	Venus	E.	35 26 22	3605	34 7 53	3606	32 49 25	3607	31 30 58	3609
	Sun	E.	62 18 56	3488	60 58 18	3486	59 37 38	3484	58 16 56	3481
13	Saturn	W.	49 33 17	3051	51 2 27	3046	52 31 43	3040	54 1 6	3034
	Spica	W.	39 42 47	3061	41 11 44	3055	42 40 49	3049	44 10 1	3042
	Sun	E.	51 32 34	3463	50 11 28	3459	48 50 18	3454	47 29 2	3449
14	Saturn	W.	61 30 0	3000	63 0 13	2993	64 30 35	2985	66 1 7	2976
	Spica	W.	51 38 12	3005	53 8 18	2997	54 38 34	2989	56 9 0	2981
	Sun	E.	40 41 14	3421	39 19 21	3415	37 57 22	3409	36 35 16	3404
15	Saturn	W.	73 36 26	2933	75 8 3	2924	76 39 52	2914	78 11 53	2905
	Spica	W.	63 43 50	2937	65 15 22	2927	66 47 6	2918	68 19 2	2909
	Sun	E.	29 43 14	3379	28 20 33	3376	26 57 49	3373	25 35 2	3373
19	Sun	W.	17 53 58	3138	19 21 21	3105	20 49 24	3077	22 18 2	3052
	Mars	E.	58 1 39	2847	56 28 12	2838	54 54 33	2828	53 20 42	2820
	Jupiter	E.	60 47 5	2662	59 9 34	2653	57 31 51	2644	55 53 56	2636
	α Arietis	E.	80 16 15	2684	78 39 14	2676	77 2 2	2668	75 24 39	2660
20	Sun	W.	29 47 43	2963	31 18 42	2950	32 49 58	2938	34 21 31	2924
	Mars	E.	45 28 38	2777	43 53 40	2769	42 18 32	2761	40 43 13	2753
	Jupiter	E.	47 41 33	2595	46 2 31	2588	44 23 19	2580	42 43 56	2572
	α Arietis	E.	67 15 19	2626	65 37 0	2621	63 58 33	2615	62 19 59	2610
21	Sun	W.	42 2 59	2869	43 35 57	2860	45 9 7	2851	46 42 29	2842
	Jupiter	E.	34 24 26	2535	32 44 2	2528	31 3 28	2522	29 22 45	2515
	α Arietis	E.	54 5 30	2590	52 26 21	2588	50 47 9	2585	49 7 54	2584
	Aldebaran	E.	84 19 3	2539	82 38 44	2533	80 58 16	2526	79 17 39	2520
22	Sun	W.	54 32 8	2800	56 6 36	2792	57 41 14	2785	59 16 2	2778
	Fomalhaut	W.	30 16 48	3252	31 41 56	3170	33 8 41	3099	34 36 52	3037
	α Arietis	E.	40 51 37	2592	39 12 31	2597	37 33 32	2604	35 54 42	2613
	Aldebaran	E.	70 52 29	2491	69 11 3	2486	67 29 30	2481	65 47 50	2477
23	Sun	W.	67 12 24	2742	68 48 8	2735	70 24 1	2729	72 0 3	2722
	Fomalhaut	W.	42 14 28	2815	43 48 37	2783	45 23 27	2753	46 58 56	2728
	Aldebaran	E.	57 18 0	2457	55 35 46	2454	53 53 28	2451	52 11 6	2450

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Pollux	W.	100° 45′ 17″	3065	102° 14′ 9″	3069	103° 42′ 56″	3072	105° 11′ 40″	3075
	Regulus	W.	64 14 59	3078	65 43 36	3081	67 12 9	3083	68 40 39	3086
	Antares	E.	35 56 43	3070	34 27 57	3073	32 59 15	3078	31 30 38	3080
	Venus	E.	51 11 8	3572	49 52 3	3577	48 33 4	3581	47 14 9	3586
	Sun	E.	78 27 8	3472	77 6 13	3476	75 45 22	3480	74 24 36	3482
11	Regulus	W.	76 2 39	3090	77 31 1	3089	78 59 24	3088	80 27 48	3087
	Saturn	W.	31 48 57	3084	33 17 26	3084	34 45 55	3082	36 14 26	3082
	Venus	E.	40 40 32	3599	39 21 57	3601	38 3 24	3602	36 44 52	3604
	Sun	E.	67 41 19	3489	66 20 43	3490	65 0 8	3489	63 39 32	3489
12	Regulus	W.	87 50 21	3074	89 19 2	3070	90 47 48	3066	92 16 39	3062
	Saturn	W.	43 37 34	3069	45 6 22	3065	46 35 15	3060	48 4 13	3056
	Spica	W.	33 48 6	3083	35 16 36	3078	36 45 13	3072	38 13 57	3067
	Venus	E.	30 12 33	3610	28 54 9	3610	27 35 46	3612	26 17 25	3614
	Sun	E.	56 56 11	3479	55 35 23	3475	54 14 31	3471	52 53 35	3467
13	**Saturn**	W.	55 30 37	3028	57 0 15	3021	58 30 2	3014	59 59 57	3008
	Spica	W.	45 39 22	3035	47 8 51	3028	48 38 29	3021	50 8 16	3014
	Sun	E.	46 7 41	3444	44 46 14	3438	43 24 40	3432	42 3 0	3427
14	**Saturn**	W.	67 31 50	2968	69 2 43	2960	70 33 46	2951	72 5 0	2942
	Spica	W.	57 39 36	2973	59 10 23	2964	60 41 21	2955	62 12 30	2946
	Sun	E.	35 13 4	3399	33 50 46	3393	32 28 21	3387	31 5 50	3383
15	**Saturn**	W.	79 44 6	2895	81 16 31	2885	82 49 9	2876	84 21 59	2866
	Spica	W.	69 51 10	2899	71 23 30	2889	72 56 3	2879	74 28 49	2869
	Sun	E.	24 12 15	3373	22 49 28	3377	21 26 45	3381	20 4 7	3386
19	**Sun**	W.	23 47 10	3031	25 16 44	3011	26 46 43	2994	28 17 3	2978
	Mars	E.	51 46 40	2811	50 12 26	2802	48 38 1	2794	47 3 25	2785
	Jupiter	E.	54 15 50	2628	52 37 33	2619	50 59 4	2611	49 20 24	2603
	α Arietis	E.	73 47 6	2653	72 9 23	2646	70 31 31	2639	68 53 29	2633
20	**Sun**	W.	35 53 20	2912	37 25 24	2901	38 57 42	2890	40 30 14	2880
	Mars	E.	39 7 44	2746	37 32 5	2738	35 56 16	2732	34 20 18	2724
	Jupiter	E.	41 4 22	2564	39 24 38	2557	37 44 44	2550	36 4 40	2543
	α Arietis	E.	60 41 17	2605	59 2 29	2600	57 23 34	2596	55 44 34	2593
21	**Sun**	W.	48 16 3	2833	49 49 48	2825	51 23 44	2816	52 57 51	2808
	Jupiter	E.	27 41 52	2508	26 0 50	2501	24 19 38	2494	22 38 17	2489
	α Arietis	E.	47 28 37	2584	45 49 20	2584	44 10 3	2585	42 30 48	2588
	Aldebaran	E.	77 36 54	2514	75 56 0	2508	74 14 58	2502	72 33 47	2497
22	**Sun**	W.	60 50 59	2770	62 26 6	2763	64 1 23	2756	65 36 49	2749
	Fomalhaut	W.	36 6 19	2981	37 36 55	2933	39 8 32	2889	40 41 5	2850
	α Arietis	E.	34 16 5	2624	32 37 43	2640	30 59 42	2658	29 22 6	2681
	Aldebaran	E.	64 6 4	2472	62 24 11	2468	60 42 13	2464	59 0 9	2460
23	**Sun**	W.	73 36 13	2716	75 12 32	2709	76 49 0	2703	78 25 36	2697
	Fomalhaut	W.	48 34 59	2703	50 11 35	2681	51 48 40	2660	53 26 13	2641
	Aldebaran	E.	50 28 42	2448	48 46 15	2446	47 3 46	2445	45 21 16	2445

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
24	Sun	W.	80° 2′ 20″	2690	81° 39′ 13″	2685	83° 16′ 13″	2679	84° 53′ 21″	2674
	Fomalhaut	W.	55 4 12	2624	56 42 35	2607	58 21 20	2592	60 0 26	2578
	α Pegasi	W.	37 59 1	3385	39 21 35	3305	40 45 41	3232	42 11 12	3168
	Aldebaran	E.	43 38 46	2446	41 56 17	2448	40 13 51	2451	38 31 29	2456
	Pollux	E.	87 1 8	2346	85 16 16	2342	83 31 17	2336	81 46 10	2331
25	Sun	W.	93 0 52	2646	94 38 44	2641	96 16 43	2637	97 54 48	2632
	Fomalhaut	W.	68 20 23	2520	70 1 8	2510	71 42 7	2502	73 23 18	2493
	α Pegasi	W.	49 35 48	2930	51 7 29	2895	52 39 54	2863	54 13 0	2834
	Pollux	E.	72 58 44	2306	71 12 53	2302	69 26 56	2297	67 40 52	2293
26	Sun	W.	106 6 47	2611	107 45 27	2607	109 24 12	2604	111 3 2	2601
	Fomalhaut	W.	81 51 52	2460	83 34 1	2455	85 16 17	2451	86 58 39	2447
	α Pegasi	W.	62 7 2	2720	63 43 15	2703	65 19 51	2657	66 56 48	2672
	Jupiter	W.	34 22 28	2314	36 8 7	2311	37 53 51	2307	39 39 40	2304
	Mars	W.	33 29 40	2482	35 11 19	2478	36 53 3	2474	38 34 53	2470
	Pollux	E.	58 48 58	2272	57 2 18	2269	55 15 33	2266	53 28 43	2263
	Regulus	E.	95 23 6	2281	93 36 38	2277	91 50 5	2274	90 3 27	2270
27	α Pegasi	W.	75 5 52	2619	76 44 21	2612	78 23 0	2605	80 1 48	2600
	Jupiter	W.	48 29 50	2291	50 16 3	2289	52 2 18	2288	53 48 35	2286
	Mars	W.	47 5 15	2455	48 47 31	2453	50 29 51	2451	52 12 13	2449
	α Arietis	W.	31 36 46	2470	33 18 42	2446	35 1 11	2427	36 44 7	2412
	Pollux	E.	44 33 30	2250	42 46 17	2249	40 59 2	2247	39 11 45	2247
	Regulus	E.	81 9 10	2258	79 22 8	2256	77 35 3	2254	75 47 56	2253
28	α Pegasi	W.	88 17 12	2587	89 56 25	2588	91 35 37	2589	93 14 47	2591
	Jupiter	W.	62 40 24	2284	64 26 47	2285	66 13 9	2285	67 59 30	2287
	Mars	W.	60 44 30	2446	62 26 59	2446	64 9 28	2448	65 51 55	2448
	α Arietis	W.	45 23 33	2359	47 8 7	2352	48 52 51	2347	50 37 42	2342
	Pollux	E.	30 15 9	2247	28 27 51	2249	26 40 36	2251	24 53 24	2253
	Regulus	E.	66 52 4	2251	65 4 53	2253	63 17 44	2253	61 30 36	2256
29	Jupiter	W.	76 50 36	2298	78 36 38	2302	80 22 35	2306	82 8 26	2310
	Mars	W.	74 23 38	2460	76 5 48	2463	77 47 53	2467	79 29 53	2472
	α Arietis	W.	59 23 7	2334	61 8 17	2335	62 53 26	2336	64 38 33	2338
	Aldebaran	W.	29 15 6	2442	30 57 41	2428	32 40 36	2416	34 23 48	2407
	Regulus	E.	52 35 46	2270	50 49 2	2274	49 2 24	2279	47 15 53	2285
	Saturn	E.	96 40 40	2247	94 53 23	2251	93 6 12	2255	91 19 6	2259
	Spica	E.	106 36 47	2258	104 49 46	2262	103 2 50	2266	101 16 0	2269
30	Mars	W.	87 58 7	2499	89 39 21	2507	91 20 25	2514	93 1 19	2521
	α Arietis	W.	73 23 9	2357	75 7 46	2362	76 52 15	2368	78 36 36	2375
	Aldebaran	W.	43 2 11	2389	44 46 2	2389	46 29 53	2391	48 13 41	2394
	Regulus	E.	38 25 35	2320	36 40 4	2328	34 54 46	2338	33 9 42	2350
	Saturn	E.	82 25 18	2285	80 38 57	2292	78 52 46	2299	77 6 45	2307
	Spica	E.	92 23 28	2296	90 37 23	2302	88 51 27	2309	87 5 41	2317
31	α Arietis	W	87 15 42	2415	88 58 55	2425	90 41 54	2435	92 24 39	2445
	Aldebaran	W	56 51 17	2419	58 34 24	2427	60 17 20	2435	62 0 5	2444
	Saturn	E	68 19 33	2349	66 34 45	2358	64 50 10	2368	63 5 50	2379
	Spica	E	78 19 46	2360	76 35 14	2370	74 50 56	2380	73 6 52	2391

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
24	**Sun**	W.	86° 30′ 36″	2668	88° 7′ 59″	2663	89° 45′ 29″	2657	91° 23′ 7″	2652
	Fomalhaut	W.	61 39 51	2564	63 19 35	2553	64 59 35	2541	66 39 51	2530
	α Pegasi	W.	43 37 59	3110	45 5 56	3058	46 34 57	3011	48 4 56	2969
	Aldebaran	E.	36 49 14	2462	35 7 7	2469	33 25 10	2478	31 43 26	2490
	Pollux	E.	80 0 55	2396	78 15 33	2391	76 30 4	2316	74 44 28	2311
25	**Sun**	W.	99 33 0	2627	101 11 18	2623	102 49 42	2618	104 28 12	2615
	Fomalhaut	W.	75 4 41	2485	76 46 15	2479	78 27 58	2472	80 9 51	2466
	α Pegasi	W.	55 46 44	2807	57 21 3	2782	58 55 54	2760	60 31 14	2739
	Pollux	E.	65 54 42	2288	64 8 25	2284	62 22 2	2280	60 35 33	2276
26	**Sun**	W.	112 41 56	2598	114 20 54	2595	115 59 56	2593	117 39 1	2591
	Fomalhaut	W.	88 41 7	2443	90 23 40	2441	92 6 16	2439	93 48 55	2437
	α Pegasi	W.	68 34 5	2659	70 11 40	2648	71 49 30	2637	73 27 35	2626
	Jupiter	W.	41 25 34	2301	43 11 32	2298	44 57 34	2296	46 43 40	2293
	Mars	W.	40 16 48	2467	41 58 48	2463	43 40 53	2460	45 23 2	2458
	Pollux	E.	51 41 49	2260	49 54 50	2257	48 7 47	2254	46 20 40	2252
	Regulus	E.	88 16 44	2268	86 29 57	2264	84 43 5	2262	82 56 9	2260
27	α Pegasi	W.	81 40 43	2595	83 19 45	2592	84 58 51	2590	86 38 0	2588
	Jupiter	W.	55 34 55	2285	57 21 16	2285	59 7 38	2284	60 54 1	2284
	Mars	W.	53 54 38	2448	55 37 4	2447	57 19 32	2446	59 2 1	2446
	α Arietis	W.	38 27 25	2398	40 11 3	2385	41 54 59	2375	43 39 10	2366
	Pollux	E.	37 24 27	2246	35 37 8	2245	33 49 48	2245	32 2 28	2246
	Regulus	E.	74 0 48	2252	72 13 38	2251	70 26 27	2251	68 39 15	2251
28	α Pegasi	W.	94 53 54	2595	96 32 56	2599	98 11 53	2604	99 50 43	2611
	Jupiter	W.	69 45 49	2289	71 32 5	2290	73 18 19	2293	75 4 29	2295
	Mars	W.	67 34 21	2450	69 16 45	2452	70 59 6	2454	72 41 24	2457
	α Arietis	W.	52 22 40	2339	54 7 43	2337	55 52 49	2335	57 37 57	2334
	Pollux	E.	23 6 16	2257	21 19 13	2262	19 32 17	2266	17 45 28	2272
	Regulus	E.	59 43 31	2258	57 56 29	2260	56 9 30	2263	54 22 36	2266
29	**Jupiter**	W.	83 54 11	2315	85 39 49	2320	87 25 20	2326	89 10 42	2331
	Mars	W.	81 11 46	2476	82 53 33	2482	84 35 12	2487	86 16 44	2493
	α Arietis	W.	66 23 37	2340	68 8 38	2344	69 53 34	2347	71 38 25	2352
	Aldebaran	W.	36 7 13	2399	37 50 49	2394	39 34 32	2391	41 18 20	2389
	Regulus	E.	45 29 31	2290	43 43 17	2297	41 57 13	2303	40 11 18	2311
	Saturn	E.	89 32 6	2263	87 45 12	2268	85 58 26	2274	84 11 48	2279
	Spica	E.	99 29 15	2274	97 42 37	2279	95 56 6	2284	94 9 43	2289
30	**Mars**	W.	94 42 3	2530	96 22 35	2538	98 2 55	2548	99 43 2	2556
	α Arietis	W.	80 20 47	2382	82 4 48	2389	83 48 38	2398	85 32 16	2406
	Aldebaran	W.	49 57 25	2397	51 41 4	2402	53 24 36	2407	55 8 1	2413
	Regulus	E.	31 24 55	2362	29 40 25	2374	27 56 13	2389	26 12 22	2404
	Saturn	E.	75 20 55	2314	73 35 16	2322	71 49 49	2331	70 4 35	2339
	Spica	E.	85 20 6	2325	83 34 43	2333	81 49 31	2342	80 4 32	2350
31	α Arietis	W.	94 7 9	2457	95 49 23	2468	97 31 21	2480	99 13 3	2492
	Aldebaran	W.	63 42 37	2453	65 24 57	2462	67 7 3	2472	68 48 55	2482
	Saturn	E.	61 21 45	2390	59 37 56	2401	57 54 22	2412	56 11 4	2424
	Spica	E.	71 23 4	2402	69 39 32	2412	67 56 15	2424	66 13 15	2436

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	21 1 34.10	10.166	S. 16 56 44.2	+43.10	16 15.99	68.21	13 52.22	0.309
Thur.	2	21 5 37.67	10.132	16 39 21.0	43.83	16 15.84	68.09	13 59.21	0.275
Frid.	3	21 9 40.43	10.098	16 21 40.4	44.55	16 15.68	67.98	14 5.40	0.241
Sat.	4	21 13 42.38	10.064	16 3 42.8	+45.24	16 15.52	67.86	14 10.78	0.207
SUN.	5	21 17 43.52	10.031	15 45 28.7	45.92	16 15.35	67.75	14 15.35	0.174
Mon.	6	21 21 43.87	9.998	15 26 58.4	46.59	16 15.18	67.63	14 19.13	0.141
Tues.	7	21 25 43.43	9.965	15 8 12.3	+47.24	16 15.00	67.52	14 22.13	0.109
Wed.	8	21 29 42.21	9.933	14 49 10.8	47.88	16 14.81	67.41	14 24.35	0.076
Thur.	9	21 33 40.22	9.901	14 29 54.3	48.49	16 14.63	67.30	14 25.80	0.045
Frid.	10	21 37 37.46	9.870	14 10 23.2	+49.09	16 14.44	67.19	14 26.48	0.013
Sat.	11	21 41 33.95	9.838	13 50 37.9	49.68	16 14.24	67.08	14 26.41	0.019
SUN.	12	21 45 29.68	9.806	13 30 38.8	50.24	16 14.05	66.97	14 25.59	0.050
Mon.	13	21 49 24.66	9.776	13 10 26.5	+50.78	16 13.85	66.86	14 24.02	0.080
Tues.	14	21 53 18.92	9.746	12 50 1.2	51.31	16 13.64	66.76	14 21.73	0.110
Wed.	15	21 57 12.45	9.715	12 29 23.4	51.82	16 13.44	66.65	14 18.72	0.141
Thur.	16	22 1 5.24	9.685	12 8 33.7	+52.31	16 13.23	66.55	14 14.96	0.171
Frid.	17	22 4 57.34	9.656	11 47 32.3	52.79	16 13.03	66.45	14 10.51	0.200
Sat.	18	22 8 48.73	9.627	11 26 19.7	53.25	16 12.82	66.35	14 5.38	0.229
SUN.	19	22 12 39.42	9.598	11 4 56.5	+53.68	16 12.61	66.25	13 59.52	0.258
Mon.	20	22 16 29.43	9.570	10 43 23.0	54.10	16 12.39	66.16	13 52.99	0.286
Tues.	21	22 20 18.78	9.542	10 21 39.6	54.50	16 12.18	66.07	13 45.81	0.313
Wed.	22	22 24 7.47	9.515	9 59 46.8	+54.89	16 11.96	65.98	13 37.96	0.340
Thur.	23	22 27 55.52	9.489	9 37 45.1	55.25	16 11.74	65.89	13 29.49	0.366
Frid.	24	22 31 42.96	9.464	9 15 34.7	55.60	16 11.51	65.80	13 20.38	0.392
Sat.	25	22 35 29.77	9.438	8 53 16.2	+55.93	16 11.29	65.72	13 10.66	0.417
SUN.	26	22 39 16.01	9.414	8 30 50.0	56.25	16 11.06	65.64	13 0.38	0.440
Mon.	27	22 43 1.67	9.391	8 8 16.3	56.55	16 10.82	65.56	12 49.52	0.464
Tues.	28	22 46 46.79	9.369	7 45 35.7	56.83	16 10.59	65.48	12 38.12	0.486
Wed.	29	22 50 31.38	9.347	S. 7 22 48.5	+57.10	16 10.35	65.41	12 26.18	0.508

Note.—The mean time of semidiameter passing may be found by subtracting 0ˢ.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	21 1 31.75	10.165	S. 16 56 54.2	+43.09	13 52.15	0.309	20 47 39.60
Thur.	2	21 5 35.31	10.131	16 39 31.8	43.82	13 59.15	0.275	20 51 36.16
Frid.	3	21 9 38.06	10.098	16 21 51.0	44.54	14 5.34	0.241	20 55 32.72
Sat.	4	21 13 40.00	10.064	16 3 53.6	+45.24	14 10.73	0.208	20 59 29.27
SUN.	5	21 17 41.14	10.031	15 45 39.7	45.92	14 15.31	0.174	21 3 25.83
Mon.	6	21 21 41.48	9.998	15 27 9.6	46.58	14 19.10	0.141	21 7 22.38
Tues.	7	21 25 41.04	9.966	15 8 23.7	+47.24	14 22.10	0.109	21 11 18.94
Wed.	8	21 29 39.83	9.933	14 49 22.3	47.87	14 24.33	0.077	21 15 15.50
Thur.	9	21 33 37.84	9.901	14 30 6.0	48.49	14 25.79	0.045	21 19 12.05
Frid.	10	21 37 35.09	9.870	14 10 35.1	+49.09	14 26.48	0.013	21 23 8.61
Sat.	11	21 41 31.58	9.838	13 50 49.9	49.67	14 26.42	0.018	21 27 5.16
SUN.	12	21 45 27.32	9.807	13 30 51.0	50.23	14 25.60	0.050	21 31 1.72
Mon.	13	21 49 22.32	9.776	13 10 38.7	+50.78	14 24.04	0.080	21 34 58.28
Tues.	14	21 53 16.59	9.746	12 50 13.6	51.31	14 21.76	0.110	21 38 54.83
Wed.	15	21 57 10.13	9.716	12 29 35.9	51.82	14 18.75	0.141	21 42 51.38
Thur.	16	22 1 2.94	9.686	12 8 46.2	+52.31	14 15.00	0.171	21 46 47.94
Frid.	17	22 4 55.06	9.657	11 47 44.8	52.79	14 10.56	0.200	21 50 44.50
Sat.	18	22 8 46.47	9.628	11 26 32.3	53.24	14 5.42	0.229	21 54 41.05
SUN.	19	22 12 37.18	9.599	11 5 9.1	+53.68	13 59.58	0.258	21 58 37.60
Mon.	20	22 16 27.22	9.571	10 43 35.6	54.10	13 53.06	0.285	22 2 34.16
Tues.	21	22 20 16.59	9.544	10 21 52.2	54.50	13 45.88	0.313	22 6 30.71
Wed.	22	22 24 5.31	9.517	9 59 59.4	+54.89	13 38.04	0.340	22 10 27.27
Thur.	23	22 27 53.39	9.490	9 37 57.6	55.25	13 29.57	0.366	22 14 23.82
Frid.	24	22 31 40.85	9.465	9 15 47.2	55.60	13 20.47	0.392	22 18 20.38
Sat.	25	22 35 27.70	9.440	8 53 28.6	+55.94	13 10.77	0.416	22 22 16.93
SUN.	26	22 39 13.97	9.416	8 31 2.2	56.25	13 0.48	0.441	22 26 13.49
Mon.	27	22 42 59.66	9.393	8 8 28.5	56.55	12 49.62	0.464	22 30 10.04
Tues.	28	22 46 44.82	9.370	7 45 47.8	56.84	12 38.22	0.486	22 34 6.60
Wed.	29	22 50 29.44	9.349	S. 7 23 0.4	+57.10	12 26.29	0.506	22 38 3.15

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 hour, $+9^s.8565$. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	32	312 55 9.3	55 12.8	152.09	+ 0.48	9.9937277	+27.9	3 11 48.89
2	33	313 55 58.8	56 2.2	152.04	0.43	9.9937958	28.9	3 7 52.98
3	34	314 56 47.3	56 50.5	152.00	0.37	9.9938664	29.9	3 3 57.06
4	35	315 57 34.8	57 37.9	151.96	+ 0.29	9.9939394	+30.9	3 0 1.16
5	36	316 58 21.3	58 24.2	151.92	0.18	9.9940147	31.8	2 56 5.24
6	37	317 59 6.8	59 9.6	151.87	+ 0.06	9.9940922	32.7	2 52 9.34
7	38	318 59 51.2	59 53.8	151.83	— 0.07	9.9941718	+33.6	2 48 13.42
8	39	320 0 34.5	0 37.0	151.78	0.20	9.9942534	34.4	2 44 17.51
9	40	321 1 16.8	1 19.2	151.74	0.32	9.9943367	35.0	2 40 21.61
10	41	322 1 58.0	2 0.2	151.69	— 0.43	9.9944216	+35.7	2 36 25.69
11	42	323 2 38.1	2 40.2	151.65	0.52	9.9945079	36.2	2 32 29.79
12	43	324 3 17.1	3 19.0	151.60	0.59	9.9945956	36.8	2 28 33.88
13	44	325 3 54.9	3 56.7	151.55	— 0.63	9.9946845	+37.3	2 24 37.96
14	45	326 4 31.4	4 33.1	151.49	0.64	9.9947745	37.7	2 20 42.06
15	46	327 5 6.4	5 7.9	151.43	0.61	9.9948655	38.1	2 16 46.15
16	47	328 5 39.9	5 41.3	151.36	— 0.56	9.9949574	+38.5	2 12 50.24
17	48	329 6 11.9	6 13.2	151.30	0.49	9.9950501	38.8	2 8 54.32
18	49	330 6 42.3	6 43.4	151.23	0.39	9.9951437	39.2	2 4 58.42
19	50	331 7 10.9	7 11.9	151.15	— 0.27	9.9952382	+39.6	2 1 2.52
20	51	332 7 37.7	7 38.6	151.08	— 0.14	9.9953337	40.0	1 57 6.60
21	52	333 8 2.5	8 3.3	150.99	0.00	9.9954302	40.4	1 53 10.70
22	53	334 8 25.4	8 26.0	150.91	+ 0.13	9.9955277	+40.9	1 49 14.78
23	54	335 8 46.3	8 46.8	150.83	0.25	9.9956263	41.4	1 45 18.88
24	55	336 9 5.3	9 5.7	150.75	0.35	9.9957262	41.9	1 41 22.97
25	56	337 9 22.3	9 22.6	150.67	+ 0.43	9.9958275	+42.5	1 37 27.06
26	57	338 9 37.3	9 37.4	150.58	0.49	9.9959304	43.2	1 33 31.15
27	58	339 9 50.2	9 50.2	150.50	0.52	9.9960348	43.8	1 29 35.23
28	59	340 10 1.2	10 1.1	150.42	0.51	9.9961407	44.5	1 25 39.33
29	60	341 10 10.2	10 10.0	150.34	+ 0.48	9.9962482	+45.1	1 21 43.42

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 51.0	15 45.7	58 3.8	−1.58	57 44.2	−1.68	13 8.2	2.10	14.4
2	15 40.1	15 34.3	57 23.6	1.74	57 2.4	1.78	13 56.3	1.92	15.4
3	15 28.5	15 22.8	56 41.0	1.77	56 19.9	1.73	14 40.8	1.80	16.4
4	15 17.2	15 11.9	55 59.4	−1.67	55 39.9	−1.57	15 22.9	1.72	17.4
5	15 6.9	15 2.5	55 21.8	1.43	55 5.5	1.28	16 3.9	1.70	18.4
6	14 58.6	14 55.2	54 51.0	1.12	54 38.7	0.93	16 45.0	1.72	19.4
7	14 52.5	14 50.5	54 28.8	−0.73	54 21.3	−0.51	17 27.1	1.79	20.4
8	14 49.2	14 48.5	54 16.5	−0.30	54 14.2	−0.08	18 11.3	1.90	21.4
9	14 48.7	14 49.5	54 14.7	+0.15	54 17.7	+0.36	18 58.2	2.02	22.4
10	14 51.0	14 53.2	54 23.4	+0.57	54 31.4	+0.77	19 48.1	2.14	23.4
11	14 56.1	14 59.5	54 41.9	0.96	54 54.5	1.13	20 40.5	2.23	24.4
12	15 3.5	15 7.8	55 9.0	1.27	55 25.1	1.40	21 34.5	2.26	25.4
13	15 12.6	15 17.7	55 42.7	+1.51	56 1.3	+1.58	22 28.5	2.24	26.4
14	15 23.0	15 28.3	56 20.7	1.63	56 40.4	1.65	23 21.5	2.17	27.4
15	15 33.7	15 39.0	57 0.2	1.63	57 19.5	1.58	6		28.4
16	15 44.1	15 48.9	57 38.2	+1.51	57 55.8	+1.42	0 12.5	2.09	29.4
17	15 53.3	15 57.3	58 12.2	1.30	58 26.9	1.15	1 1.6	2.01	0.8
18	16 0.9	16 3.9	58 39.9	1.01	58 51.1	0.85	1 49.4	1.97	1.8
19	16 6.4	16 8.4	59 0.3	+0.68	59 7.5	+0.52	2 36.7	1.98	2.8
20	16 9.9	16 10.8	59 12.9	0.38	59 16.5	+0.23	3 24.8	2.04	3.8
21	16 11.4	16 11.5	59 18.5	+0.10	59 18.8	−0.03	4 15.0	2.15	4.8
22	16 11.2	16 10.6	59 17.8	−0.14	59 15.5	−0.24	5 8.3	2.29	5.8
23	16 9.6	16 8.4	59 12.0	0.34	59 7.4	0.43	6 5.2	2.45	6.8
24	16 6.8	16 5.1	59 1.8	0.50	58 55.3	0.58	7 5.3	2.55	7.8
25	16 3.0	16 0.7	58 47.8	−0.66	58 39.4	−0.74	8 7.0	2.56	8.8
26	15 58.2	15 55.4	58 30.0	0.83	58 19.6	0.90	9 7.7	2.48	9.8
27	15 52.3	15 48.9	58 8.3	0.98	57 56.0	1.07	10 5.3	2.32	10.8
28	15 45.3	15 41.4	57 42.7	1.15	57 28.5	1.21	10 58.7	2.13	11.8
29	15 37.4	15 33.1	57 13.6	−1.27	56 58.0	−1.32	11 47.8	1.96	12.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 1.					**FRIDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 28 38.97	2.2863	N.19 58 42.8	11.580	0	11 10 16.98	1.9714	N. 9 19 24.7	14.458
1	9 30 55.92	2.2786	19 47 5.0	11.679	1	11 12 15.12	1.9666	9 4 56.5	14.482
2	9 33 12.40	2.2709	19 35 21.3	11.776	2	11 14 12.97	1.9618	8 50 26.9	14.504
3	9 35 28.42	2.2632	19 23 31.9	11.871	3	11 16 10.53	1.9570	8 35 56.0	14.526
4	9 37 43.98	2.2555	19 11 36.8	11.964	4	11 18 7.81	1.9523	8 21 23.8	14.547
5	9 39 59.08	2.2479	18 59 36.2	12.055	5	11 20 4.81	1.9477	8 6 50.4	14.567
6	9 42 13.73	2.2403	18 47 30.2	12.145	6	11 22 1.54	1.9432	7 52 15.8	14.585
7	9 44 27.92	2.2328	18 35 18.8	12.233	7	11 23 58.00	1.9388	7 37 40.2	14.602
8	9 46 41.66	2.2253	18 23 2.2	12.319	8	11 25 54.20	1.9345	7 23 3.6	14.617
9	9 48 54.96	2.2179	18 10 40.5	12.404	9	11 27 50.14	1.9302	7 8 26.1	14.632
10	9 51 7.81	2.2104	17 58 13.7	12.487	10	11 29 45.83	1.9261	6 53 47.7	14.646
11	9 53 20.21	2.2030	17 45 42.1	12.567	11	11 31 41.27	1.9220	6 39 8.6	14.657
12	9 55 32.17	2.1956	17 33 5.7	12.646	12	11 33 36.47	1.9180	6 24 28.8	14.668
13	9 57 43.69	2.1883	17 20 24.6	12.724	13	11 35 31.43	1.9141	6 9 48.4	14.679
14	9 59 54.77	2.1811	17 7 38.8	12.801	14	11 37 26.16	1.9102	5 55 7.3	14.689
15	10 2 5.42	2.1739	16 54 48.5	12.875	15	11 39 20.65	1.9063	5 40 25.7	14.697
16	10 4 15.64	2.1667	16 41 53.8	12.947	16	11 41 14.92	1.9027	5 25 43.7	14.704
17	10 6 25.43	2.1597	16 28 54.8	13.018	17	11 43 8.97	1.8991	5 11 1.3	14.710
18	10 8 34.80	2.1527	16 15 51.6	13.087	18	11 45 2.81	1.8956	4 56 18.5	14.715
19	10 10 43.75	2.1457	16 2 44.3	13.155	19	11 46 56.44	1.8921	4 41 35.5	14.718
20	10 12 52.28	2.1387	15 49 33.0	13.221	20	11 48 49.86	1.8887	4 26 52.3	14.721
21	10 15 0.39	2.1318	15 36 17.8	13.285	21	11 50 43.08	1.8854	4 12 9.0	14.723
22	10 17 8.09	2.1249	15 22 58.8	13.348	22	11 52 36.11	1.8822	3 57 25.6	14.724
23	10 19 15.38	2.1182	N.15 9 36.0	13.410	23	11 54 28.95	1.8791	N. 3 42 42.1	14.724
	THURSDAY 2.					**SATURDAY 4.**			
0	10 21 22.27	2.1115	N.14 56 9.6	13.469	0	11 56 21.60	1.8760	N. 3 27 58.7	14.723
1	10 23 28.76	2.1048	14 42 39.7	13.527	1	11 58 14.07	1.8731	3 13 15.4	14.721
2	10 25 34.85	2.0982	14 29 6.4	13.583	2	12 0 6.37	1.8702	2 58 32.2	14.717
3	10 27 40.55	2.0917	14 15 29.7	13.638	3	12 1 58.49	1.8673	2 43 49.3	14.712
4	10 29 45.86	2.0853	14 1 49.8	13.692	4	12 3 50.45	1.8647	2 29 6.7	14.707
5	10 31 50.79	2.0790	13 48 6.7	13.743	5	12 5 42.25	1.8620	2 14 24.4	14.702
6	10 33 55.34	2.0727	13 34 20.6	13.793	6	12 7 33.89	1.8594	1 59 42.4	14.696
7	10 35 59.51	2.0664	13 20 31.5	13.842	7	12 9 25.38	1.8569	1 45 0.9	14.688
8	10 38 3.31	2.0602	13 6 39.5	13.890	8	12 11 16.72	1.8545	1 30 19.9	14.678
9	10 40 6.74	2.0542	12 52 44.7	13.936	9	12 13 7.92	1.8522	1 15 39.5	14.668
10	10 42 9.81	2.0482	12 38 47.2	13.980	10	12 14 58.99	1.8500	1 0 59.7	14.658
11	10 44 12.52	2.0422	12 24 47.1	14.023	11	12 16 49.92	1.8478	0 46 20.5	14.648
12	10 46 14.87	2.0362	12 10 44.4	14.065	12	12 18 40.72	1.8457	0 31 41.9	14.637
13	10 48 16.87	2.0304	11 56 39.3	14.106	13	12 20 31.40	1.8437	0 17 4.1	14.623
14	10 50 18.52	2.0247	11 42 31.8	14.144	14	12 22 21.96	1.8417	N. 0 2 27.2	14.608
15	10 52 19.83	2.0191	11 28 22.0	14.182	15	12 24 12.41	1.8399	S. 0 12 8.8	14.593
16	10 54 20.81	2.0135	11 14 10.0	14.217	16	12 26 2.75	1.8382	0 26 43.9	14.578
17	10 56 21.45	2.0079	10 59 55.9	14.252	17	12 27 52.99	1.8364	0 41 18.1	14.562
18	10 58 21.76	2.0025	10 45 39.8	14.285	18	12 29 43.12	1.8347	0 55 51.3	14.544
19	11 0 21.75	1.9971	10 31 21.7	14.317	19	12 31 33.16	1.8332	1 10 23.4	14.526
20	11 2 21.42	1.9918	10 17 1.7	14.347	20	12 33 23.11	1.8318	1 24 54.4	14.507
21	11 4 20.77	1.9866	10 2 40.0	14.376	21	12 35 12.98	1.8305	1 39 24.2	14.487
22	11 6 19.81	1.9815	9 48 16.6	14.404	22	12 37 2.77	1.8292	1 53 52.8	14.466
23	11 8 18.55	1.9764	9 33 51.5	14.432	23	12 38 52.48	1.8279	2 8 20.1	14.445
24	11 10 16.98	1.9714	N. 9 19 24.7	14.458	24	12 40 42.11	1.8267	S. 2 22 46.2	14.423

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 5.					**TUESDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 40 42.11	1.8267	S. 2 22 46.2	14.423	0	14 8 28.22	1.8574	S. 13 15 36.3	12.510
1	12 42 31.68	1.8257	2 37 10.9	14.400	1	14 10 19.73	1.8597	13 28 5.2	12.453
2	12 44 21.19	1.8247	2 51 34.2	14.376	2	14 12 11.38	1.8621	13 40 30.6	12.396
3	12 46 10.64	1.8237	3 5 56.0	14.351	3	14 14 3.18	1.8646	13 52 52.6	12.337
4	12 48 0.04	1.8229	3 20 16.3	14.326	4	14 15 55.13	1.8670	14 5 11.1	12.278
5	12 49 49.39	1.8222	3 34 35.1	14.301	5	14 17 47.23	1.8695	14 17 26.0	12.219
6	12 51 38.70	1.8215	3 48 52.4	14.274	6	14 19 39.48	1.8721	14 29 37.4	12.159
7	12 53 27.97	1.8208	4 3 8.0	14.246	7	14 21 31.89	1.8748	14 41 45.1	12.098
8	12 55 17.20	1.8202	4 17 21.9	14.218	8	14 23 24.46	1.8776	14 53 49.1	12.037
9	12 57 6.40	1.8198	4 31 34.1	14.189	9	14 25 17.20	1.8804	15 5 49.5	11.975
10	12 58 55.58	1.8195	4 45 44.6	14.159	10	14 27 10.11	1.8832	15 17 46.1	11.911
11	13 0 44.74	1.8192	4 59 53.2	14.128	11	14 29 3.19	1.8861	15 29 38.8	11.847
12	13 2 33.88	1.8189	5 14 0.0	14.097	12	14 30 56.44	1.8890	15 41 27.7	11.782
13	13 4 23.01	1.8187	5 28 4.9	14.065	13	14 32 49.87	1.8921	15 53 12.7	11.717
14	13 6 12.13	1.8187	5 42 7.8	14.033	14	14 34 43.49	1.8952	16 4 53.8	11.652
15	13 8 1.25	1.8187	5 56 8.8	14.000	15	14 36 37.29	1.8983	16 16 30.9	11.585
16	13 9 50.37	1.8187	6 10 7.8	13.966	16	14 38 31.28	1.9014	16 28 4.0	11.518
17	13 11 39.50	1.8188	6 24 4.7	13.930	17	14 40 25.46	1.9047	16 39 33.0	11.450
18	13 13 28.63	1.8189	6 37 59.4	13.894	18	14 42 19.84	1.9080	16 50 58.0	11.382
19	13 15 17.77	1.8192	6 51 52.0	13.858	19	14 44 14.42	1.9113	17 2 18.8	11.312
20	13 17 6.94	1.8196	7 5 42.4	13.822	20	14 46 9.20	1.9147	17 13 35.4	11.242
21	13 18 56.13	1.8201	7 19 30.6	13.784	21	14 48 4.18	1.9181	17 24 47.8	11.171
22	13 20 45.35	1.8206	7 33 16.5	13.746	22	14 49 59.37	1.9216	17 35 55.9	11.099
23	13 22 34.60	1.8211	S. 7 47 0.1	13.707	23	14 51 54.77	1.9252	S. 17 46 59.6	11.026
	MONDAY 6.					**WEDNESDAY 8.**			
0	13 24 23.88	1.8217	S. 8 0 41.4	13.668	0	14 53 50.39	1.9288	S. 17 57 59.0	10.953
1	13 26 13.20	1.8224	8 14 20.3	13.627	1	14 55 46.22	1.9324	18 8 54.0	10.879
2	13 28 2.57	1.8232	8 27 56.7	13.586	2	14 57 42.27	1.9361	18 19 44.5	10.804
3	13 29 51.99	1.8241	8 41 30.6	13.544	3	14 59 38.55	1.9398	18 30 30.5	10.728
4	13 31 41.46	1.8250	8 55 2.0	13.502	4	15 1 35.05	1.9436	18 41 11.9	10.653
5	13 33 30.99	1.8259	9 8 30.8	13.458	5	15 3 31.78	1.9473	18 51 48.8	10.577
6	13 35 20.57	1.8269	9 21 57.0	13.414	6	15 5 28.73	1.9512	19 2 21.1	10.499
7	13 37 10.22	1.8281	9 35 20.5	13.370	7	15 7 25.92	1.9552	19 12 48.7	10.420
8	13 38 59.94	1.8293	9 48 41.4	13.326	8	15 9 23.35	1.9591	19 23 11.5	10.340
9	13 40 49.74	1.8306	10 1 59.6	13.280	9	15 11 21.01	1.9630	19 33 29.5	10.260
10	13 42 39.61	1.8319	10 15 15.0	13.233	10	15 13 18.91	1.9671	19 43 42.7	10.180
11	13 44 29.57	1.8333	10 28 27.5	13.185	11	15 15 17.06	1.9712	19 53 51.1	10.099
12	13 46 19.61	1.8347	10 41 37.2	13.137	12	15 17 15.45	1.9753	20 3 54.6	10.017
13	13 48 9.74	1.8362	10 54 44.0	13.089	13	15 19 14.09	1.9794	20 13 53.1	9.933
14	13 49 59.96	1.8378	11 7 47.9	13.040	14	15 21 12.98	1.9836	20 23 46.6	9.849
15	13 51 50.28	1.8395	11 20 48.8	12.990	15	15 23 12.12	1.9878	20 33 35.0	9.764
16	13 53 40.70	1.8413	11 33 46.7	12.939	16	15 25 11.51	1.9920	20 43 18.3	9.678
17	13 55 31.23	1.8431	11 46 41.5	12.889	17	15 27 11.16	1.9963	20 52 56.4	9.592
18	13 57 21.87	1.8449	11 59 33.3	12.837	18	15 29 11.07	2.0007	21 2 29.4	9.506
19	13 59 12.62	1.8468	12 12 21.9	12.784	19	15 31 11.24	2.0050	21 11 57.1	9.418
20	14 1 3.49	1.8488	12 25 7.3	12.730	20	15 33 11.67	2.0093	21 21 19.5	9.329
21	14 2 54.48	1.8508	12 37 49.5	12.676	21	15 35 12.36	2.0137	21 30 36.6	9.240
22	14 4 45.59	1.8530	12 50 28.4	12.621	22	15 37 13.32	2.0180	21 39 48.3	9.149
23	14 6 36.84	1.8552	13 3 4.0	12.566	23	15 39 14.55	2.0227	21 48 54.5	9.058
24	14 8 28.22	1.8574	S. 13 15 36.3	12.510	24	15 41 16.04	2.0271	S. 21 57 55.2	8.966

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 41 16.04	2.0271	S.21 57 55.2	8.966
1	15 43 17.80	2.0316	22 6 50.4	8.873
2	15 45 19.83	2.0362	22 15 40.0	8.780
3	15 47 22.14	2.0407	22 24 24.0	8.686
4	15 49 24.72	2.0452	22 33 2.3	8.590
5	15 51 27.57	2.0498	22 41 34.8	8.494
6	15 53 30.70	2.0545	22 50 1.6	8.398
7	15 55 34.11	2.0591	22 58 22.6	8.300
8	15 57 37.79	2.0637	23 6 37.6	8.201
9	15 59 41.75	2.0683	23 14 46.7	8.102
10	16 1 45.99	2.0730	23 22 49.8	8.002
11	16 3 50.51	2.0778	23 30 46.9	7.900
12	16 5 55.32	2.0825	23 38 37.8	7.798
13	16 8 0.41	2.0871	23 46 22.6	7.696
14	16 10 5.77	2.0917	23 54 1.3	7.592
15	16 12 11.41	2.0964	24 1 33.7	7.487
16	16 14 17.34	2.1011	24 8 59.8	7.382
17	16 16 23.55	2.1058	24 16 19.6	7.276
18	16 18 30.04	2.1105	24 23 33.0	7.169
19	16 20 36.81	2.1152	24 30 39.9	7.062
20	16 22 43.87	2.1200	24 37 40.4	6.953
21	16 24 51.21	2.1247	24 44 34.3	6.843
22	16 26 58.83	2.1293	24 51 21.6	6.733
23	16 29 6.73	2.1339	S.24 58 2.3	6.622

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 31 14.90	2.1386	S.25 4 36.2	6.509
1	16 33 23.36	2.1433	25 11 3.4	6.396
2	16 35 32.10	2.1479	25 17 23.8	6.283
3	16 37 41.11	2.1525	25 23 37.4	6.169
4	16 39 50.40	2.1572	25 29 44.1	6.053
5	16 41 59.97	2.1618	25 35 43.8	5.937
6	16 44 9.82	2.1664	25 41 36.6	5.821
7	16 46 19.94	2.1709	25 47 22.3	5.703
8	16 48 30.33	2.1754	25 53 0.9	5.584
9	16 50 40.99	2.1799	25 58 32.4	5.465
10	16 52 51.92	2.1843	26 3 56.7	5.344
11	16 55 3.11	2.1888	26 9 13.7	5.223
12	16 57 14.57	2.1932	26 14 23.4	5.101
13	16 59 26.29	2.1975	26 19 25.8	4.978
14	17 1 38.27	2.2019	26 24 20.8	4.855
15	17 3 50.52	2.2063	26 29 8.4	4.731
16	17 6 3.03	2.2106	26 33 48.5	4.606
17	17 8 15.79	2.2148	26 38 21.1	4.481
18	17 10 28.80	2.2189	26 42 46.2	4.354
19	17 12 42.06	2.2231	26 47 3.6	4.226
20	17 14 55.57	2.2272	26 51 13.3	4.098
21	17 17 9.33	2.2313	26 55 15.4	3.970
22	17 19 23.33	2.2353	26 59 9.7	3.839
23	17 21 37.56	2.2392	27 2 56.1	3.708
24	17 23 52.03	2.2431	S.27 6 34.7	3.577

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 23 52.03	2.2431	S.27 6 34.7	3.577
1	17 26 6.73	2.2469	27 10 5.4	3.446
2	17 28 21.66	2.2507	27 13 28.2	3.314
3	17 30 36.82	2.2545	27 16 43.1	3.181
4	17 32 52.20	2.2582	27 19 50.0	3.047
5	17 35 7.80	2.2618	27 22 48.8	2.912
6	17 37 23.62	2.2654	27 25 39.4	2.776
7	17 39 39.65	2.2688	27 28 21.9	2.641
8	17 41 55.88	2.2723	27 30 56.3	2.505
9	17 44 12.32	2.2757	27 33 22.5	2.367
10	17 46 28.96	2.2789	27 35 40.4	2.229
11	17 48 45.79	2.2821	27 37 50.0	2.092
12	17 51 2.81	2.2852	27 39 51.4	1.953
13	17 53 20.02	2.2883	27 41 44.4	1.813
14	17 55 37.41	2.2914	27 43 28.9	1.672
15	17 57 54.99	2.2944	27 45 5.0	1.531
16	18 0 12.74	2.2972	27 46 32.6	1.390
17	18 2 30.66	2.3000	27 47 51.8	1.249
18	18 4 48.74	2.3027	27 49 2.5	1.107
19	18 7 6.98	2.3053	27 50 4.6	0.964
20	18 9 25.38	2.3079	27 50 58.1	0.820
21	18 11 43.93	2.3104	27 51 43.0	0.676
22	18 14 2.63	2.3127	27 52 19.2	0.532
23	18 16 21.46	2.3150	S.27 52 46.8	0.388

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 18 40.43	2.3172	S.27 53 5.7	0.243
1	18 20 59.53	2.3193	27 53 15.9	− 0.097
2	18 23 18.75	2.3214	27 53 17.3	+ 0.050
3	18 25 38.10	2.3234	27 53 9.9	0.197
4	18 27 57.56	2.3252	27 52 53.7	0.343
5	18 30 17.13	2.3270	27 52 28.8	0.489
6	18 32 36.80	2.3287	27 51 55.1	0.636
7	18 34 56.57	2.3303	27 51 12.5	0.784
8	18 37 16.44	2.3318	27 50 21.0	0.932
9	18 39 36.39	2.3332	27 49 20.6	1.081
10	18 41 56.42	2.3345	27 48 11.3	1.229
11	18 44 16.53	2.3358	27 46 53.1	1.378
12	18 46 36.72	2.3370	27 45 25.9	1.527
13	18 48 56.97	2.3380	27 43 49.8	1.677
14	18 51 17.28	2.3389	27 42 4.7	1.826
15	18 53 37.64	2.3398	27 40 10.7	1.975
16	18 55 58.05	2.3406	27 38 7.7	2.125
17	18 58 18.51	2.3412	27 35 55.7	2.274
18	19 0 39.00	2.3417	27 33 34.8	2.423
19	19 2 59.52	2.3422	27 31 4.9	2.573
20	19 5 20.07	2.3427	27 28 26.0	2.723
21	19 7 40.65	2.3431	27 25 38.1	2.874
22	19 10 1.24	2.3432	27 22 41.1	3.025
23	19 12 21.84	2.3433	27 19 35.1	3.175
24	19 14 42.44	2.3433	S.27 16 20.1	3.326

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 14 42.44	2.3433	S.27 16 20.1	3.326
1	19 17 3.04	2.3433	27 12 56.1	3.475
2	19 19 23.64	2.3432	27 9 23.1	3.624
3	19 21 44.23	2.3430	27 5 41.2	3.773
4	19 24 4.80	2.3426	27 1 50.3	3.923
5	19 26 25.34	2.3421	26 57 50.4	4.073
6	19 28 45.85	2.3416	26 53 41.5	4.222
7	19 31 6.33	2.3410	26 49 23.7	4.372
8	19 33 26.77	2.3403	26 44 56.9	4.522
9	19 35 47.17	2.3396	26 40 21.1	4.671
10	19 38 7.52	2.3387	26 35 36.4	4.819
11	19 40 27.81	2.3377	26 30 42.8	4.968
12	19 42 48.05	2.3367	26 25 40.3	5.116
13	19 45 8.22	2.3356	26 20 28.9	5.263
14	19 47 28.32	2.3344	26 15 8.7	5.411
15	19 49 48.35	2.3332	26 9 39.6	5.558
16	19 52 8.30	2.3318	26 4 1.7	5.705
17	19 54 28.17	2.3304	25 58 15.0	5.852
18	19 56 47.95	2.3289	25 52 19.4	5.999
19	19 59 7.64	2.3273	25 46 15.1	6.144
20	20 1 27.23	2.3257	25 40 2.1	6.289
21	20 3 46.72	2.3239	25 33 40.4	6.434
22	20 6 6.10	2.3221	25 27 10.0	6.578
23	20 8 25.37	2.3202	S.25 20 31.0	6.722

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 10 44.53	2.3183	S.25 13 43.4	6.865
1	20 13 3.57	2.3163	25 6 47.2	7.008
2	20 15 22.49	2.3142	24 59 42.4	7.151
3	20 17 41.28	2.3121	24 52 29.1	7.292
4	20 19 59.94	2.3099	24 45 7.3	7.433
5	20 22 18.47	2.3077	24 37 37.1	7.573
6	20 24 36.86	2.3054	24 29 58.5	7.712
7	20 26 55.11	2.3030	24 22 11.5	7.852
8	20 29 13.22	2.3006	24 14 16.2	7.992
9	20 31 31.18	2.2981	24 6 12.5	8.131
10	20 33 48.99	2.2955	23 58 0.5	8.267
11	20 36 6.64	2.2929	23 49 40.4	8.403
12	20 38 24.14	2.2903	23 41 12.1	8.539
13	20 40 41.48	2.2877	23 32 35.7	8.674
14	20 42 58.66	2.2849	23 23 51.2	8.809
15	20 45 15.67	2.2822	23 14 58.6	8.942
16	20 47 32.52	2.2794	23 5 58.1	9.075
17	20 49 49.20	2.2766	22 56 49.6	9.207
18	20 52 5.71	2.2737	22 47 33.2	9.339
19	20 54 22.05	2.2708	22 38 8.9	9.469
20	20 56 38.21	2.2678	22 28 36.9	9.598
21	20 58 54.19	2.2648	22 18 57.2	9.726
22	21 1 9.99	2.2618	22 9 9.8	9.854
23	21 3 25.61	2.2588	21 59 14.7	9.981
24	21 5 41.05	2.2557	S.21 49 12.1	10.107

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	′
0	21 5 41.05	2.2557	S.21 49 12.1	10.107
1	21 7 56.30	2.2527	21 39 1.9	10.232
2	21 10 11.37	2.2496	21 28 44.2	10.356
3	21 12 26.25	2.2464	21 18 19.2	10.479
4	21 14 40.94	2.2433	21 7 46.8	10.601
5	21 16 55.44	2.2402	20 57 7.1	10.722
6	21 19 9.76	2.2371	20 46 20.2	10.842
7	21 21 23.89	2.2339	20 35 26.1	10.961
8	21 23 37.82	2.2306	20 24 24.9	11.079
9	21 25 51.56	2.2274	20 13 16.6	11.197
10	21 28 5.11	2.2242	20 2 1.3	11.313
11	21 30 18.46	2.2209	19 50 39.1	11.427
12	21 32 31.62	2.2177	19 39 10.1	11.540
13	21 34 44.59	2.2145	19 27 34.3	11.653
14	21 36 57.36	2.2113	19 15 51.7	11.765
15	21 39 9.94	2.2081	19 4 2.5	11.876
16	21 41 22.33	2.2049	18 52 6.7	11.986
17	21 43 34.53	2.2017	18 40 4.3	12.094
18	21 45 46.53	2.1984	18 27 55.4	12.201
19	21 47 58.34	2.1952	18 15 40.1	12.306
20	21 50 9.96	2.1921	18 3 18.5	12.411
21	21 52 21.39	2.1889	17 50 50.7	12.514
22	21 54 32.62	2.1857	17 38 16.7	12.616
23	21 56 43.67	2.1826	S.17 25 36.5	12.718

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 58 54.53	2.1794	S.17 12 50.3	12.820
1	22 1 5.20	2.1763	16 59 58.1	12.919
2	22 3 15.69	2.1732	16 47 0.0	13.017
3	22 5 25.99	2.1702	16 33 56.1	13.113
4	22 7 36.11	2.1672	16 20 46.4	13.209
5	22 9 46.05	2.1641	16 7 31.0	13.303
6	22 11 55.80	2.1611	15 54 10.1	13.395
7	22 14 5.38	2.1582	15 40 43.6	13.487
8	22 16 14.78	2.1552	15 27 11.6	13.577
9	22 18 24.00	2.1523	15 13 34.3	13.666
10	22 20 33.05	2.1494	14 59 51.7	13.754
11	22 22 41.93	2.1466	14 46 3.8	13.840
12	22 24 50.64	2.1438	14 32 10.7	13.927
13	22 26 59.18	2.1410	14 18 12.6	14.010
14	22 29 7.56	2.1382	14 4 9.5	14.093
15	22 31 15.77	2.1355	13 50 1.4	14.175
16	22 33 23.82	2.1329	13 35 48.5	14.255
17	22 35 31.72	2.1303	13 21 30.8	14.334
18	22 37 39.46	2.1277	13 7 8.4	14.412
19	22 39 47.05	2.1252	12 52 41.4	14.488
20	22 41 54.49	2.1227	12 38 9.9	14.563
21	22 44 1.77	2.1202	12 23 34.0	14.635
22	22 46 8.91	2.1178	12 8 53.7	14.707
23	22 48 15.91	2.1155	11 54 9.1	14.778
24	22 50 22.77	2.1132	S.11 39 20.2	14.848

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 17.					**SUNDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 50 22.77	2.1132	S. 11 39 20.2	14.849	0	0 30 19.71	2.0780	N. 1 6 54.7	16.527
1	22 52 29.50	2.1110	11 24 27.2	14.917	1	0 32 24.42	2.0791	1 23 26.3	16.526
2	22 54 36.09	2.1088	11 9 30.2	14.983	2	0 34 29.20	2.0802	1 39 57.8	16.524
3	22 56 42.55	2.1067	10 54 29.3	15.048	3	0 36 34.05	2.0814	1 56 29.2	16.521
4	22 58 48.89	2.1047	10 39 24.5	15.113	4	0 38 36.97	2.0828	2 13 0.3	16.515
5	23 0 55.11	2.1026	10 24 15.8	15.176	5	0 40 43.98	2.0842	2 29 31.0	16.508
6	23 3 1.20	2.1006	10 9 3.4	15.237	6	0 42 49.07	2.0856	2 46 1.3	16.500
7	23 5 7.18	2.0987	9 53 47.4	15.297	7	0 44 54.25	2.0872	3 2 31.0	16.490
8	23 7 13.04	2.0968	9 38 27.8	15.356	8	0 46 59.53	2.0888	3 19 0.1	16.479
9	23 9 18.79	2.0950	9 23 4.7	15.413	9	0 49 4.91	2.0905	3 35 28.5	16.466
10	23 11 24.44	2.0933	9 7 38.3	15.468	10	0 51 10.39	2.0923	3 51 56.0	16.451
11	23 13 29.99	2.0916	8 52 8.6	15.523	11	0 53 15.98	2.0942	4 8 22.6	16.436
12	23 15 35.43	2.0899	8 36 35.6	15.576	12	0 55 21.69	2.0962	4 24 48.3	16.419
13	23 17 40.78	2.0884	8 20 59.5	15.627	13	0 57 27.52	2.0982	4 41 12.9	16.400
14	23 19 46.04	2.0869	8 5 20.3	15.677	14	0 59 33.47	2.1003	4 57 36.3	16.379
15	23 21 51.21	2.0854	7 49 38.2	15.726	15	1 1 39.55	2.1025	5 13 58.4	16.357
16	23 23 56.29	2.0841	7 33 53.2	15.773	16	1 3 45.77	2.1048	5 30 19.1	16.333
17	23 26 1.30	2.0828	7 18 5.4	15.819	17	1 5 52.13	2.1072	5 46 38.4	16.308
18	23 28 6.23	2.0816	7 2 14.9	15.863	18	1 7 58.63	2.1096	6 2 56.1	16.282
19	23 30 11.09	2.0804	6 46 21.8	15.907	19	1 10 5.28	2.1121	6 19 12.2	16.253
20	23 32 15.88	2.0793	6 30 26.1	15.949	20	1 12 12.09	2.1147	6 35 26.5	16.223
21	23 34 20.60	2.0782	6 14 27.9	15.989	21	1 14 19.05	2.1173	6 51 39.0	16.192
22	23 36 25.27	2.0773	5 58 27.4	16.027	22	1 16 26.17	2.1201	7 7 49.6	16.160
23	23 38 29.88	2.0764	S. 5 42 24.6	16.065	23	1 18 33.46	2.1230	N. 7 23 58.2	16.126
	SATURDAY 18.					**MONDAY 20.**			
0	23 40 34.44	2.0756	S. 5 26 19.6	16.101	0	1 20 40.93	2.1259	N. 7 40 4.6	16.089
1	23 42 38.95	2.0748	5 10 12.5	16.135	1	1 22 48.57	2.1289	7 56 8.8	16.052
2	23 44 43.42	2.0742	4 54 3.4	16.168	2	1 24 56.40	2.1320	8 12 10.8	16.013
3	23 46 47.85	2.0736	4 37 52.3	16.201	3	1 27 4.41	2.1351	8 28 10.4	15.972
4	23 48 52.25	2.0730	4 21 39.3	16.231	4	1 29 12.61	2.1383	8 44 7.5	15.930
5	23 50 56.61	2.0724	4 5 24.6	16.259	5	1 31 21.01	2.1416	9 0 2.0	15.886
6	23 53 0.94	2.0720	3 49 8.2	16.287	6	1 33 29.61	2.1450	9 15 53.8	15.841
7	23 55 5.25	2.0718	3 32 50.2	16.313	7	1 35 38.41	2.1485	9 31 42.9	15.794
8	23 57 9.55	2.0716	3 16 30.7	16.338	8	1 37 47.43	2.1521	9 47 29.1	15.745
9	23 59 13.84	2.0714	3 0 9.7	16.361	9	1 39 56.66	2.1557	10 3 12.3	15.695
10	0 1 18.12	2.0712	2 43 47.4	16.382	10	1 42 6.11	2.1593	10 18 52.5	15.643
11	0 3 22.39	2.0712	2 27 23.9	16.401	11	1 44 15.78	2.1631	10 34 29.5	15.590
12	0 5 26.66	2.0712	2 10 59.3	16.419	12	1 46 25.68	2.1669	10 50 3.3	15.536
13	0 7 30.94	2.0714	1 54 33.6	16.437	13	1 48 35.81	2.1708	11 5 33.8	15.479
14	0 9 35.23	2.0716	1 38 6.9	16.453	14	1 50 46.18	2.1748	11 21 0.8	15.421
15	0 11 39.53	2.0718	1 21 39.3	16.467	15	1 52 56.79	2.1788	11 36 24.3	15.362
16	0 13 43.85	2.0722	1 5 10.9	16.479	16	1 55 7.64	2.1829	11 51 44.2	15.300
17	0 15 48.20	2.0727	0 48 41.8	16.491	17	1 57 18.74	2.1871	12 7 0.3	15.237
18	0 17 52.58	2.0733	0 32 12.0	16.501	18	1 59 30.09	2.1913	12 22 12.6	15.173
19	0 19 56.99	2.0739	S. 0 15 41.7	16.509	19	2 1 41.70	2.1957	12 37 21.0	15.107
20	0 22 1.44	2.0746	N. 0 0 49.1	16.516	20	2 3 53.57	2.2001	12 52 25.4	15.039
21	0 24 5.93	2.0753	0 17 20.2	16.521	21	2 6 5.71	2.2046	13 7 25.7	14.970
22	0 26 10.47	2.0761	0 33 51.6	16.524	22	2 8 18.12	2.2091	13 22 21.8	14.899
23	0 28 15.06	2.0770	0 50 23.1	16.526	23	2 10 30.80	2.2136	13 37 13.6	14.827
24	0 30 19.71	2.0780	N. 1 6 54.7	16.527	24	2 12 43.75	2.2182	N. 13 52 1.0	14.753

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
TUESDAY 21.					**THURSDAY 23.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 12 43.75	2.2182	N.13 52 1.0	14.753	0	4 5 21.83	2.4817	N.23 44 3.7	9.307
1	2 14 56.98	2.2229	14 6 43.9	14.677	1	4 7 50.90	2.4871	23 53 17.6	9.156
2	2 17 10.50	2.2277	14 21 22.2	14.599	2	4 10 20.28	2.4924	24 2 22.4	9.004
3	2 19 24.31	2.2326	14 35 55.8	14.520	3	4 12 49.98	2.4977	24 11 18.1	8.851
4	2 21 38.41	2.2374	14 50 24.6	14.440	4	4 15 20.00	2.5029	24 20 4.5	8.696
5	2 23 52.80	2.2423	15 4 48.6	14.358	5	4 17 50.33	2.5081	24 28 41.5	8.539
6	2 26 7.49	2.2473	15 19 7.6	14.274	6	4 20 20.98	2.5133	24 37 9.1	8.382
7	2 28 22.48	2.2524	15 33 21.5	14.188	7	4 22 51.93	2.5183	24 45 27.3	8.222
8	2 30 37.78	2.2575	15 47 30.2	14.102	8	4 25 23.18	2.5233	24 53 35.8	8.061
9	2 32 53.38	2.2626	16 1 33.7	14.013	9	4 27 54.72	2.5282	25 1 34.6	7.899
10	2 35 9.29	2.2678	16 15 31.8	13.922	10	4 30 26.56	2.5331	25 9 23.7	7.737
11	2 37 25.52	2.2731	16 29 24.4	13.830	11	4 32 58.69	2.5378	25 17 3.1	7.574
12	2 39 42.07	2.2784	16 43 11.4	13.737	12	4 35 31.10	2.5425	25 24 32.6	7.408
13	2 41 58.93	2.2837	16 56 52.8	13.642	13	4 38 3.79	2.5471	25 31 52.1	7.242
14	2 44 16.11	2.2891	17 10 28.4	13.544	14	4 40 36.75	2.5516	25 39 1.6	7.075
15	2 46 33.62	2.2946	17 23 58.1	13.446	15	4 43 9.98	2.5560	25 46 1.1	6.907
16	2 48 51.46	2.3000	17 37 21.9	13.346	16	4 45 43.47	2.5603	25 52 50.4	6.737
17	2 51 9.62	2.3054	17 50 39.6	13.244	17	4 48 17.22	2.5646	25 59 29.5	6.567
18	2 53 28.11	2.3110	18 3 51.2	13.141	18	4 50 51.22	2.5687	26 5 58.4	6.395
19	2 55 46.94	2.3166	18 16 56.5	13.036	19	4 53 25.46	2.5727	26 12 16.9	6.222
20	2 58 6.10	2.3221	18 29 55.5	12.930	20	4 55 59.94	2.5766	26 18 25.0	6.048
21	3 0 25.59	2.3277	18 42 48.1	12.822	21	4 58 34.65	2.5804	26 24 22.7	5.874
22	3 2 45.42	2.3334	18 55 34.1	12.712	22	5 1 9.59	2.5842	26 30 9.9	5.698
23	3 5 5.59	2.3391	N.19 8 13.5	12.600	23	5 3 44.75	2.5877	N.26 35 46.5	5.522
WEDNESDAY 22.					**FRIDAY 24.**				
0	3 7 26.11	2.3448	N.19 20 46.1	12.487	0	5 6 20.11	2.5911	N.26 41 12.5	5.345
1	3 9 46.97	2.3505	19 33 11.9	12.372	1	5 8 55.68	2.5945	26 46 27.9	5.167
2	3 12 8.17	2.3562	19 45 30.8	12.256	2	5 11 31.45	2.5977	26 51 32.5	4.987
3	3 14 29.71	2.3619	19 57 42.6	12.138	3	5 14 7.40	2.6007	26 56 26.3	4.807
4	3 16 51.60	2.3677	20 9 47.3	12.019	4	5 16 43.53	2.6037	27 1 9.3	4.627
5	3 19 13.83	2.3734	20 21 44.9	11.898	5	5 19 19.84	2.6065	27 5 41.5	4.446
6	3 21 36.41	2.3792	20 33 35.1	11.775	6	5 21 56.31	2.6092	27 10 2.8	4.264
7	3 23 59.34	2.3851	20 45 17.9	11.652	7	5 24 32.94	2.6118	27 14 13.2	4.082
8	3 26 22.62	2.3908	20 56 53.3	11.526	8	5 27 9.72	2.6142	27 18 12.6	3.898
9	3 28 46.24	2.3966	21 8 21.0	11.398	9	5 29 46.64	2.6164	27 22 0.9	3.713
10	3 31 10.21	2.4024	21 19 41.0	11.269	10	5 32 23.69	2.6185	27 25 38.2	3.529
11	3 33 34.53	2.4082	21 30 53.3	11.139	11	5 35 0.86	2.6205	27 29 4.4	3.345
12	3 35 59.19	2.4139	21 41 57.7	11.007	12	5 37 38.15	2.6224	27 32 19.6	3.160
13	3 38 24.20	2.4197	21 52 54.1	10.873	13	5 40 15.55	2.6241	27 35 23.6	2.974
14	3 40 49.55	2.4254	22 3 42.5	10.739	14	5 42 53.04	2.6256	27 38 16.4	2.788
15	3 43 15.25	2.4312	22 14 22.8	10.602	15	5 45 30.62	2.6270	27 40 58.1	2.602
16	3 45 41.29	2.4369	22 24 54.8	10.464	16	5 48 8.28	2.6282	27 43 28.6	2.415
17	3 48 7.68	2.4426	22 35 18.5	10.324	17	5 50 46.01	2.6293	27 45 47.9	2.227
18	3 50 34.41	2.4483	22 45 33.7	10.183	18	5 53 23.80	2.6302	27 47 55.9	2.040
19	3 53 1.48	2.4539	22 55 40.4	10.041	19	5 56 1.64	2.6310	27 49 52.7	1.852
20	3 55 28.88	2.4595	23 5 38.6	9.897	20	5 58 39.52	2.6317	27 51 38.2	1.664
21	3 57 56.62	2.4651	23 15 28.1	9.752	21	6 1 17.44	2.6322	27 53 12.4	1.476
22	4 0 24.69	2.4706	23 25 8.8	9.605	22	6 3 55.38	2.6324	27 54 35.3	1.288
23	4 2 53.09	2.4762	23 34 40.7	9.457	23	6 6 33.33	2.6326	27 55 47.0	1.100
24	4 5 21.83	2.4817	N.23 44 3.7	9.307	24	6 9 11.29	2.6326	N.27 56 47.3	0.911

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 25.					MONDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 9 11.29	2.6326	N.27 56 47.3	0.911	0	8 12 39.68	2.4617	N.25 11 41.9	7.479
1	6 11 49.24	2.6324	27 57 36.3	0.723	1	8 15 7.19	2.4554	25 4 9.1	7.621
2	6 14 27.18	2.6321	27 58 14.1	0.536	2	8 17 34.33	2.4492	24 56 27.4	7.768
3	6 17 5.09	2.6316	27 58 40.6	0.348	3	8 20 1.09	2.4428	24 48 36.9	7.914
4	6 19 42.97	2.6310	27 58 55.8	+ 0.159	4	8 22 27.47	2.4363	24 40 37.7	8.058
5	6 22 20.81	2.6302	27 58 59.7	− 0.029	5	8 24 53.45	2.4297	24 32 29.9	8.201
6	6 24 58.59	2.6292	27 58 52.3	0.217	6	8 27 19.04	2.4232	24 24 13.6	8.342
7	6 27 36.31	2.6280	27 58 33.7	0.404	7	8 29 44.23	2.4166	24 15 48.9	8.482
8	6 30 13.95	2.6267	27 58 3.8	0.591	8	8 32 9.03	2.4100	24 7 15.8	8.621
9	6 32 51.51	2.6253	27 57 22.7	0.778	9	8 34 33.43	2.4033	23 58 34.4	8.758
10	6 35 28.98	2.6237	27 56 30.4	0.964	10	8 36 57.43	2.3966	23 49 44.9	8.893
11	6 38 6.35	2.6219	27 55 27.0	1.150	11	8 39 21.02	2.3898	23 40 47.3	9.027
12	6 40 43.61	2.6200	27 54 12.4	1.336	12	8 41 44.20	2.3829	23 31 41.7	9.159
13	6 43 20.75	2.6179	27 52 46.6	1.522	13	8 44 6.97	2.3761	23 22 28.2	9.289
14	6 45 57.76	2.6157	27 51 9.8	1.706	14	8 46 29.33	2.3692	23 13 7.0	9.417
15	6 48 34.63	2.6133	27 49 21.9	1.890	15	8 48 51.28	2.3624	23 3 38.1	9.545
16	6 51 11.35	2.6107	27 47 23.0	2.074	16	8 51 12.82	2.3555	22 54 1.6	9.672
17	6 53 47.91	2.6080	27 45 13.0	2.258	17	8 53 33.94	2.3485	22 44 17.5	9.797
18	6 56 24.31	2.6052	27 42 52.0	2.441	18	8 55 54.64	2.3415	22 34 26.0	9.919
19	6 59 0.53	2.6022	27 40 20.1	2.622	19	8 58 14.92	2.3346	22 24 27.2	10.040
20	7 1 36.57	2.5991	27 37 37.4	2.803	20	9 0 34.79	2.3277	22 14 21.2	10.159
21	7 4 12.42	2.5958	27 34 43.8	2.983	21	9 2 54.24	2.3207	22 4 8.1	10.277
22	7 6 48.07	2.5924	27 31 39.4	3.163	22	9 5 13.27	2.3137	21 53 48.0	10.393
23	7 9 23.51	2.5888	N.27 28 24.2	3.342	23	9 7 31.88	2.3067	N.21 43 21.0	10.508
	SUNDAY 26.					TUESDAY 28.			
0	7 11 58.73	2.5852	N.27 24 58.3	3.520	0	9 9 50.07	2.2997	N.21 32 47.1	10.621
1	7 14 33.73	2.5813	27 21 21.8	3.697	1	9 12 7.84	2.2927	21 22 6.5	10.732
2	7 17 8.49	2.5773	27 17 34.6	3.874	2	9 14 25.19	2.2858	21 11 19.2	10.842
3	7 19 43.01	2.5733	27 13 36.9	4.049	3	9 16 42.13	2.2788	21 0 25.4	10.950
4	7 22 17.29	2.5691	27 9 28.7	4.223	4	9 18 58.65	2.2717	20 49 25.2	11.057
5	7 24 51.30	2.5646	27 5 10.1	4.397	5	9 21 14.74	2.2647	20 38 18.6	11.162
6	7 27 25.04	2.5601	27 0 41.1	4.569	6	9 23 30.42	2.2578	20 27 5.8	11.265
7	7 29 58.51	2.5556	26 56 1.8	4.741	7	9 25 45.68	2.2509	20 15 46.8	11.367
8	7 32 31.71	2.5509	26 51 12.2	4.912	8	9 28 0.53	2.2441	20 4 21.8	11.467
9	7 35 4.62	2.5461	26 46 12.4	5.081	9	9 30 14.97	2.2372	19 52 50.8	11.565
10	7 37 37.24	2.5412	26 41 2.5	5.248	10	9 32 29.00	2.2303	19 41 14.0	11.662
11	7 40 9.56	2.5361	26 35 42.6	5.415	11	9 34 42.61	2.2234	19 29 31.4	11.758
12	7 42 41.57	2.5309	26 30 12.7	5.582	12	9 36 55.81	2.2167	19 17 43.1	11.852
13	7 45 13.27	2.5257	26 24 32.8	5.747	13	9 39 8.61	2.2099	19 5 49.2	11.943
14	7 47 44.65	2.5203	26 18 43.1	5.909	14	9 41 21.00	2.2031	18 53 49.9	12.033
15	7 50 15.70	2.5148	26 12 43.7	6.071	15	9 43 32.98	2.1963	18 41 45.2	12.122
16	7 52 46.42	2.5093	26 6 34.6	6.232	16	9 45 44.56	2.1896	18 29 35.2	12.210
17	7 55 16.81	2.5037	26 0 15.8	6.392	17	9 47 55.74	2.1830	18 17 20.0	12.296
18	7 57 46.86	2.4979	25 53 47.5	6.551	18	9 50 6.52	2.1763	18 4 59.7	12.380
19	8 0 16.56	2.4921	25 47 9.7	6.707	19	9 52 16.90	2.1697	17 52 34.4	12.462
20	8 2 45.91	2.4862	25 40 22.6	6.862	20	9 54 26.89	2.1632	17 40 4.2	12.544
21	8 5 14.90	2.4802	25 33 26.2	7.017	21	9 56 36.49	2.1567	17 27 29.1	12.624
22	8 7 43.53	2.4741	25 26 20.5	7.171	22	9 58 45.70	2.1503	17 14 49.3	12.702
23	8 10 11.79	2.4679	25 19 5.7	7.323	23	10 0 54.53	2.1439	17 2 4.9	12.778
24	8 12 39.68	2.4617	N.25 11 41.9	7.479	24	10 3 2.97	2.1375	N.16 49 16.0	12.853

GREENWICH MEAN TIME.

PHASES OF THE MOON.

		d	h	m
☾ Last Quarter	Feb.	8	8	11.7
● New Moon		16	4	16.6
☽ First Quarter		23	2	13.8

		d	h
☾ Apogee	Feb.	8	15.8
☾ Perigee		21	8.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Arietis	W.	100° 54′ 27″	2504	102° 35′ 34″	2518	104° 16′ 22″	2532	105° 56′ 51″	2545
	Aldebaran	W.	70 30 33	2494	72 11 55	2505	73 53 1	2517	75 33 51	2529
	Pollux	W.	26 19 58	2450	28 2 21	2462	29 44 27	2474	31 26 17	2487
	Saturn	E.	54 28 3	2436	52 45 19	2448	51 2 52	2460	49 20 43	2473
	Spica	E.	64 30 31	2448	62 48 5	2460	61 5 56	2474	59 24 6	2487
	Antares	E.	110 23 7	2443	108 40 34	2455	106 58 18	2468	105 16 20	2481
2	Aldebaran	W.	83 53 40	2594	85 32 43	2607	87 11 28	2622	88 49 53	2636
	Pollux	W.	39 51 2	2551	41 31 4	2564	43 10 48	2579	44 50 12	2593
	Saturn	E.	40 54 35	2540	39 14 18	2555	37 34 21	2569	35 54 43	2583
	Spica	E.	50 59 36	2556	49 19 40	2570	47 40 4	2585	46 0 48	2600
	Antares	E.	96 51 5	2548	95 10 59	2562	93 31 12	2576	91 51 44	2591
3	Aldebaran	W.	96 57 7	2710	98 33 34	2724	100 9 42	2740	101 45 29	2754
	Pollux	W.	53 2 23	2664	54 39 51	2678	56 17 0	2693	57 53 49	2707
	Spica	E.	37 49 37	2676	36 12 25	2692	34 35 34	2708	32 59 5	2724
	Antares	E.	83 39 20	2663	82 1 50	2678	80 24 40	2692	78 47 49	2707
4	Pollux	W.	65 53 10	2779	67 28 6	2792	69 2 44	2806	70 37 4	2819
	Regulus	W.	29 31 4	2818	31 5 8	2829	32 38 58	2840	34 12 34	2851
	Antares	E.	70 48 24	2778	69 13 27	2792	67 38 49	2805	66 4 28	2819
	Venus	E.	116 29 5	3247	115 3 51	3262	113 38 55	3276	112 14 16	3291
	Sun	E.	138 5 31	3174	136 38 51	3188	135 12 28	3202	133 46 21	3214
5	Pollux	W.	78 24 27	2884	79 57 6	2896	81 29 30	2908	83 1 39	2919
	Regulus	W.	41 57 4	2905	43 29 16	2916	45 1 14	2927	46 32 59	2938
	Antares	E.	58 17 4	2884	56 44 25	2896	55 12 1	2909	53 39 53	2920
	Venus	E.	105 15 13	3361	103 52 12	3375	102 29 27	3387	101 6 56	3400
	Sun	E.	126 39 35	3279	125 14 59	3291	123 50 37	3304	122 26 30	3315
6	Pollux	W.	90 38 55	2972	92 9 43	2981	93 40 20	2990	95 10 45	2998
	Regulus	W.	54 8 29	2986	55 38 59	2995	57 9 18	3003	58 39 27	3012
	Antares	E.	46 2 43	2973	44 31 57	2982	43 1 22	2992	41 30 59	3000
	Venus	E.	94 17 50	3458	92 56 39	3468	91 35 39	3479	90 14 51	3488
	Sun	E.	115 29 10	3370	114 6 19	3379	112 43 39	3388	111 21 9	3398
7	Pollux	W.	102 40 22	3035	104 9 51	3041	105 39 13	3046	107 8 29	3052
	Regulus	W.	66 7 49	3046	67 37 5	3052	69 6 14	3057	70 35 16	3061
	Saturn	W.	22 6 23	3026	23 36 4	3031	25 5 38	3036	26 35 6	3040
	Antares	E.	34 1 35	3039	32 32 10	3044	31 2 52	3051	29 33 42	3056
	Venus	E.	83 33 18	3528	82 13 25	3535	80 53 40	3541	79 34 1	3546
	Sun	E.	104 31 5	3436	103 9 29	3442	101 48 0	3447	100 26 37	3453
8	Regulus	W.	77 59 12	3078	79 27 48	3080	80 56 22	3082	82 24 54	3082
	Saturn	W.	34 1 13	3056	35 30 16	3059	36 59 16	3060	38 28 15	3061
	Spica	W.	23 58 14	3098	25 26 26	3096	26 54 40	3096	28 22 55	3095
	Venus	E.	72 57 8	3567	71 37 58	3569	70 18 50	3572	68 59 45	3573
	α Aquilæ	E.	76 41 39	3963	75 29 23	3978	74 17 22	3993	73 5 36	4009
	Sun	E.	93 41 0	3471	92 20 4	3473	90 59 10	3475	89 38 18	3477
9	Regulus	W.	89 47 29	3080	91 16 3	3078	92 44 39	3076	94 13 18	3073
	Saturn	W.	45 53 3	3058	47 22 4	3056	48 51 8	3053	50 20 15	3051

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff.
1	α Arietis	W.	107° 37′ 1″	2560	109° 16′ 51″	2574	110° 56′ 21″	2590	112° 35′ 30″	2604
	Aldebaran	W.	77 14 24	2541	78 54 40	2554	80 34 38	2567	82 14 18	2580
	Pollux	W.	33 7 49	2499	34 49 4	2511	36 30 2	2525	38 10 41	2538
	Saturn	E.	47 38 52	2487	45 57 20	2499	44 16 6	2513	42 35 11	2527
	Spica	E.	57 42 34	2500	56 1 21	2514	54 20 27	2527	52 39 52	2541
	Antares	E.	103 34 40	2494	101 53 18	2507	100 12 15	2520	98 31 30	2535
2	Aldebaran	W.	90 27 59	2651	92 5 45	2665	93 43 12	2680	95 20 19	2694
	Pollux	W.	46 29 17	2607	48 8 3	2621	49 46 29	2635	51 24 36	2650
	Saturn	E.	34 15 24	2597	32 36 25	2612	30 57 46	2626	29 19 27	2641
	Spica	E.	44 21 53	2615	42 43 18	2630	41 5 4	2645	39 27 10	2660
	Antares	E.	90 12 36	2605	88 33 48	2619	86 55 19	2634	85 17 10	2648
3	Aldebaran	W.	103 20 57	2770	104 56 4	2785	106 30 52	2801	108 5 19	2815
	Pollux	W.	59 30 19	2722	61 6 30	2736	62 42 22	2750	64 17 55	2764
	Spica	E.	31 22 57	2741	29 47 11	2757	28 11 47	2774	26 36 45	2790
	Antares	E.	77 11 18	2721	75 35 6	2735	73 59 13	2750	72 23 39	2764
4	Pollux	W.	72 11 7	2833	73 44 52	2846	75 18 20	2859	76 51 32	2872
	Regulus	W.	35 45 56	2862	37 19 4	2873	38 51 58	2883	40 24 38	2894
	Antares	E.	64 30 25	2832	62 56 39	2846	61 23 11	2859	59 49 59	2872
	Venus	E.	110 49 54	3306	109 25 49	3320	108 2 1	3334	106 38 29	3348
	Sun	E.	132 20 29	3928	130 54 53	3941	129 29 32	3953	128 4 26	3966
5	Pollux	W.	84 33 34	2931	86 5 14	2941	87 36 41	2952	89 7 54	2962
	Regulus	W.	48 4 30	2948	49 35 48	2958	51 6 54	2968	52 37 47	2977
	Antares	E.	52 7 59	2931	50 36 20	2942	49 4 54	2953	47 33 42	2963
	Venus	E.	99 44 40	3413	98 22 38	3424	97 0 49	3436	95 39 13	3447
	Sun	E.	121 2 36	3327	119 38 56	3338	118 15 28	3349	116 52 13	3359
6	Pollux	W.	96 41 0	3007	98 11 4	3014	99 40 59	3022	101 10 45	3029
	Regulus	W.	60 9 25	3019	61 39 14	3026	63 8 54	3033	64 38 26	3040
	Antares	E.	40 0 46	3009	38 30 44	3017	37 0 52	3024	35 31 9	3031
	Venus	E.	88 54 13	3497	87 33 45	3506	86 13 27	3514	84 53 18	3522
	Sun	E.	109 58 50	3407	108 36 41	3414	107 14 40	3422	105 52 48	3430
7	Pollux	W.	108 37 38	3056	110 6 42	3060	111 35 40	3064	113 4 34	3066
	Regulus	W.	72 4 13	3066	73 33 4	3069	75 1 51	3073	76 30 33	3076
	Saturn	W.	28 4 29	3045	29 33 46	3048	31 2 59	3052	32 32 8	3055
	Antares	E.	28 4 38	3061	26 35 41	3066	25 6 50	3070	23 38 4	3074
	Venus	E.	78 14 28	3552	76 55 1	3556	75 35 39	3561	74 16 22	3564
	Sun	E.	99 5 20	3458	97 44 9	3462	96 23 2	3465	95 1 59	3469
8	Regulus	W.	83 53 25	3063	85 21 55	3062	86 50 26	3062	88 18 57	3062
	Saturn	W.	39 57 12	3061	41 26 9	3061	42 55 6	3060	44 24 4	3060
	Spica	W.	29 51 11	3093	31 19 29	3091	32 47 49	3089	34 16 12	3087
	Venus	E.	67 40 41	3574	66 21 38	3574	65 2 35	3574	63 43 32	3573
	α Aquilæ	E.	71 54 5	4036	70 42 51	4049	69 31 53	4061	68 21 13	4081
	Sun	E.	88 17 28	3477	86 56 38	3477	85 35 48	3476	84 14 57	3475
9	Regulus	W.	95 42 1	3069	97 10 48	3065	98 39 40	3061	100 8 37	3057
	Saturn	W.	51 49 25	3047	53 18 40	3043	54 48 0	3039	56 17 25	3033

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Spica	W.	35° 44′ 37″	3084	37° 13′ 6″	3082	38° 41′ 38″	3078	40° 10′ 14″	3074
	Venus	E.	62 24 28	3572	61 5 23	3569	59 46 15	3567	58 27 5	3565
	α Aquilæ	E.	67 10 53	4102	66 0 53	4125	64 51 15	4149	63 42 0	4174
	Sun	E.	82 54 5	3473	81 33 11	3471	80 12 15	3469	78 51 16	3466
10	Regulus	W.	101 37 39	3052	103 6 48	3047	104 36 3	3040	106 5 26	3033
	Saturn	W.	57 46 57	3028	59 16 35	3022	60 46 21	3016	62 16 14	3009
	Spica	W.	47 34 34	3050	49 3 45	3043	50 33 4	3037	52 2 31	3030
	Venus	E.	51 50 18	3544	50 30 42	3537	49 10 59	3532	47 51 10	3525
	α Aquilæ	E.	58 2 20	4331	56 55 56	4372	55 50 9	4414	54 45 0	4459
	Sun	E.	72 5 18	3443	70 43 50	3437	69 22 15	3430	68 0 32	3423
11	Saturn	W.	69 47 54	2969	71 18 45	2961	72 49 47	2951	74 21 1	2942
	Spica	W.	59 32 4	2989	61 2 30	2980	62 33 8	2971	64 3 57	2961
	Venus	E.	41 10 10	3488	39 49 32	3480	38 28 45	3471	37 7 48	3463
	α Aquilæ	E.	49 30 43	4762	48 30 35	4841	47 31 32	4926	46 33 38	5022
	Sun	E.	61 9 52	3382	59 47 15	3372	58 24 27	3363	57 1 28	3352
12	Saturn	W.	82 0 23	2888	83 32 57	2876	85 5 46	2865	86 38 50	2853
	Spica	W.	71 41 19	2907	73 13 29	2895	74 45 54	2883	76 18 34	2872
	Antares	W.	25 47 23	2909	27 19 31	2897	28 51 54	2884	30 24 33	2872
	Venus	E.	30 20 38	3418	28 58 42	3410	27 36 37	3403	26 14 24	3396
	Sun	E.	50 3 33	3299	48 39 20	3287	47 14 53	3275	45 50 12	3264
13	Saturn	W.	94 28 8	2790	96 2 49	2776	97 37 48	2763	99 13 4	2750
	Spica	W.	84 5 51	2808	85 40 8	2795	87 14 42	2782	88 49 33	2769
	Antares	W.	38 11 55	2807	39 46 14	2794	41 20 50	2780	42 55 44	2766
	Sun	E.	38 43 19	3204	37 17 14	3192	35 50 55	3180	34 24 22	3168
14	Saturn	W.	107 13 47	2683	108 50 50	2670	110 28 10	2657	112 5 48	2643
	Spica	W.	96 48 14	2701	98 24 52	2689	100 1 47	2675	101 39 0	2661
	Antares	W.	50 54 41	2699	52 31 22	2685	54 8 22	2672	55 45 40	2658
	Sun	E.	27 8 23	3120	25 40 38	3114	24 12 45	3108	22 44 45	3105
17	Sun	W.	11 7 42	3078	12 36 18	2997	14 6 35	2934	15 38 11	2885
	Mars	E.	54 43 10	2624	53 4 47	2614	51 26 11	2604	49 47 22	2596
	α Arietis	E.	58 6 38	2494	56 25 16	2488	54 43 46	2483	53 2 9	2479
	Aldebaran	E.	88 24 49	2458	86 42 37	2450	85 0 13	2441	83 17 37	2433
18	Sun	W.	23 28 4	2753	25 3 34	2736	26 39 26	2722	28 15 37	2710
	Mars	E.	41 30 30	2558	39 50 37	2551	38 10 34	2544	36 30 22	2538
	α Arietis	E.	44 33 0	2472	42 51 7	2475	41 9 18	2477	39 27 33	2483
	Aldebaran	E.	74 41 59	2400	72 58 24	2394	71 14 41	2389	69 30 51	2385
	Pollux	E.	118 30 35	2349	116 45 47	2342	115 0 49	2337	113 15 43	2331
19	Sun	W.	36 20 9	2663	37 57 38	2657	39 35 16	2651	41 13 2	2645
	Aldebaran	E.	60 50 20	2371	59 6 3	2369	57 21 44	2368	55 37 24	2368
	Pollux	E.	104 28 14	2307	102 42 24	2303	100 56 29	2300	99 10 29	2296
20	Sun	W.	49 23 30	2625	51 1 51	2623	52 40 15	2621	54 18 42	2618
	Aldebaran	E.	46 56 2	2379	45 11 57	2383	43 27 58	2389	41 44 7	2396
	Pollux	E.	90 19 26	2285	88 33 4	2283	86 46 40	2282	85 0 14	2281

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff.
9	Spica	W.	41° 38′ 55″	3070	43° 7′ 41″	3066	44° 36′ 32″	3060	46° 5′ 30″	3056
	Venus	E.	57 7 52	3561	55 48 35	3557	54 29 14	3554	53 9 49	3548
	α Aquilæ	E.	62 33 9	4201	61 24 44	4230	60 16 46	4261	59 9 17	4296
	Sun	E.	77 30 14	3462	76 9 7	3458	74 47 56	3454	73 26 40	3448
10	Regulus	W.	107 34 58	3026	109 4 38	3019	110 34 27	3012	112 4 25	3004
	Saturn	W.	63 46 15	3002	65 16 25	2994	66 46 45	2987	68 17 14	2978
	Spica	W.	53 32 6	3022	55 1 51	3015	56 31 45	3007	58 1 49	2998
	Venus	E.	46 31 14	3519	45 11 11	3511	43 50 59	3504	42 30 39	3496
	α Aquilæ	E.	53 40 32	4510	52 36 49	4565	51 33 54	4625	50 31 51	4690
	Sun	E.	66 38 42	3415	65 16 43	3408	63 54 36	3400	62 32 19	3391
11	Saturn	W.	75 52 27	2931	77 24 6	2921	78 55 58	2910	80 28 4	2900
	Spica	W.	65 34 59	2950	67 6 14	2940	68 37 42	2929	70 9 24	2919
	Venus	E.	35 46 42	3454	34 25 26	3445	33 4 0	3436	31 42 24	3427
	α Aquilæ	E.	45 37 0	5125	44 41 42	5242	43 47 52	5369	42 55 35	5513
	Sun	E.	55 38 17	3343	54 14 55	3332	52 51 20	3321	51 27 33	3310
12	Saturn	W.	88 12 9	2841	89 45 44	2828	91 19 36	2815	92 53 44	2803
	Spica	W.	77 51 29	2859	79 24 40	2847	80 58 7	2834	82 31 51	2821
	Antares	W.	31 57 28	2859	33 30 40	2846	35 4 8	2833	36 37 53	2820
	Venus	E.	24 52 3	3391	23 29 36	3386	22 7 3	3382	20 44 26	3380
	Sun	E.	44 25 18	3252	43 0 10	3239	41 34 47	3227	40 9 10	3215
13	Saturn	W.	100 48 37	2737	102 24 28	2724	104 0 36	2710	105 37 2	2696
	Spica	W.	90 24 42	2756	92 0 8	2742	93 35 52	2729	95 11 54	2715
	Antares	W.	44 30 56	2753	46 6 26	2740	47 42 13	2726	49 18 18	2713
	Sun	E.	32 57 35	3158	31 30 35	3147	30 3 22	3138	28 35 58	3129
14	Saturn	W.	113 43 45	2629	115 22 0	2616	117 0 33	2603	118 39 24	2590
	Spica	W.	103 16 32	2648	104 54 22	2635	106 32 29	2622	108 10 54	2609
	Antares	W.	57 23 16	2645	59 1 10	2632	60 39 22	2618	62 17 52	2605
	Sun	E.	21 16 41	3104	19 48 36	3108	18 20 36	3115	16 52 45	3129
17	Sun	W.	17 10 49	2848	18 44 15	2818	20 18 20	2792	21 52 58	2771
	Mars	E.	48 8 22	2588	46 29 10	2580	44 49 47	2572	43 10 14	2564
	α Arietis	E.	51 20 26	2475	49 38 38	2473	47 56 47	2472	46 14 54	2471
	Aldebaran	E.	81 34 50	2426	79 51 52	2419	78 8 44	2412	76 25 26	2405
18	Sun	W.	29 52 4	2698	31 28 46	2688	33 5 42	2679	34 42 50	2671
	Mars	E.	34 50 2	2533	33 9 34	2527	31 28 59	2522	29 48 17	2518
	α Arietis	E.	37 45 56	2490	36 4 29	2499	34 23 15	2512	32 42 19	2528
	Aldebaran	E.	67 46 55	2381	66 2 53	2378	64 18 46	2375	62 34 35	2372
	Pollux	E.	111 30 28	2325	109 45 5	2320	107 59 35	2315	106 13 58	2311
19	Sun	W.	42 50 56	2640	44 28 56	2636	46 7 2	2632	47 45 14	2629
	Aldebaran	E.	53 53 4	2369	52 8 45	2370	50 24 27	2372	48 40 12	2375
	Pollux	E.	97 24 24	2294	95 38 15	2291	93 52 2	2289	92 5 46	2286
20	Sun	W.	55 57 12	2617	57 35 44	2615	59 14 18	2614	60 52 54	2614
	Aldebaran	E.	40 0 26	2404	38 16 57	2415	36 33 42	2427	34 50 43	2439
	Pollux	E.	83 13 46	2280	81 27 17	2280	79 40 48	2280	77 54 19	2279

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
21	Sun	W.	62° 31′ 30″	2613	64° 10′ 7″	2613	65° 48′ 44″	2613	67° 27′ 21″	2613
	Pollux	E.	76 7 49	2279	74 21 19	2280	72 34 50	2281	70 48 22	2281
	Regulus	E.	112 41 22	2291	110 55 9	2290	109 8 55	2291	107 22 42	2291
22	Sun	W.	75 40 14	2618	77 18 44	2620	78 57 12	2621	80 35 38	2624
	Jupiter	W.	26 35 45	2346	28 20 37	2348	30 5 27	2350	31 50 14	2352
	Pollux	E.	61 56 23	2287	60 10 5	2289	58 23 50	2291	56 37 38	2293
	Regulus	E.	98 31 51	2296	96 45 46	2298	94 59 43	2300	93 13 43	2302
23	Sun	W.	88 47 4	2635	90 25 12	2638	92 3 16	2640	93 41 16	2643
	Jupiter	W.	40 33 23	2363	42 17 51	2366	44 2 14	2369	45 46 33	2372
	α Arietis	W.	28 28 15	2559	30 8 7	2535	31 48 31	2517	33 29 21	2500
	Mars	W.	25 56 13	2510	27 37 12	2513	29 18 7	2515	30 58 59	2519
	Pollux	E.	47 47 24	2305	46 1 32	2308	44 15 44	2311	42 30 1	2314
	Regulus	E.	84 24 29	2313	82 38 48	2316	80 53 12	2319	79 7 40	2322
24	Sun	W.	101 50 13	2660	103 27 46	2663	105 5 15	2668	106 42 38	2672
	Jupiter	W.	54 27 5	2388	56 10 57	2391	57 54 44	2395	59 38 26	2398
	α Arietis	W.	41 57 58	2455	43 40 15	2450	45 22 38	2447	47 5 6	2444
	Mars	W.	39 22 11	2535	41 2 36	2539	42 42 55	2543	44 23 9	2546
	Regulus	E.	70 21 6	2338	68 36 2	2342	66 51 3	2346	65 6 10	2350
25	Sun	W.	114 48 10	2694	116 24 58	2698	118 1 40	2704	119 38 15	2708
	Jupiter	W.	68 15 34	2419	69 58 42	2423	71 41 44	2428	73 24 39	2432
	α Arietis	W.	55 38 4	2441	57 20 41	2442	59 3 16	2443	60 45 50	2445
	Mars	W.	52 43 0	2566	54 22 41	2571	56 2 16	2575	57 41 45	2580
	Aldebaran	W.	25 43 35	2613	27 22 12	2590	29 1 21	2571	30 40 56	2556
	Regulus	E.	56 23 16	2372	54 39 1	2377	52 54 53	2382	51 10 52	2387
	Saturn	E.	99 27 47	2339	97 42 45	2343	95 57 48	2347	94 12 57	2352
26	Jupiter	W.	81 57 35	2457	83 39 49	2462	85 21 55	2468	87 3 53	2474
	α Arietis	W.	69 17 48	2460	70 59 58	2463	72 42 3	2467	74 24 2	2472
	Mars	W.	65 57 28	2606	67 36 15	2611	69 14 55	2617	70 53 27	2623
	Aldebaran	W.	39 2 58	2515	40 43 50	2512	42 24 47	2510	44 5 46	2509
	Regulus	E.	42 32 50	2418	40 49 41	2424	39 6 41	2432	37 23 52	2440
	Saturn	E.	85 30 23	2375	83 46 13	2381	82 2 11	2386	80 18 16	2392
	Spica	E.	96 31 29	2398	94 47 52	2403	93 4 22	2409	91 21 0	2414
27	Jupiter	W.	95 31 40	2504	97 12 47	2511	98 53 45	2518	100 34 33	2525
	α Arietis	W.	82 52 13	2499	84 33 28	2505	86 14 34	2511	87 55 32	2518
	Mars	W.	79 4 4	2655	80 41 45	2661	82 19 17	2668	83 56 40	2675
	Aldebaran	W.	52 30 36	2517	54 11 25	2520	55 52 11	2524	57 32 51	2527
	Saturn	E.	71 40 46	2422	69 57 42	2428	68 14 47	2435	66 32 2	2441
	Spica	E.	82 46 12	2444	81 3 40	2451	79 21 18	2458	77 39 6	2465
28	α Arietis	W.	96 17 52	2556	97 57 48	2564	99 37 32	2573	101 17 4	2582
	Mars	W.	92 1 2	2714	93 37 23	2722	95 13 33	2732	96 49 31	2740
	Aldebaran	W.	65 54 33	2556	67 34 29	2562	69 14 16	2569	70 53 54	2576
	Pollux	W.	21 40 24	2508	23 21 26	2515	25 2 19	2522	26 43 2	2530
	Saturn	E.	58 0 45	2478	56 19 1	2487	54 37 29	2494	52 56 8	2502
	Spica	E.	69 10 35	2502	67 29 25	2510	65 48 26	2519	64 7 39	2527
	Antares	E.	115 3 26	2498	113 22 10	2506	111 41 5	2515	110 0 12	2522

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
21	Sun W.	69° 5′ 58″	2614	70° 44′ 34″	2615	72° 23′ 9″	2616	74° 1′ 42″	2617
	Pollux E.	69 1 55	2282	67 15 29	2283	65 29 5	2285	63 42 43	2286
	Regulus E.	105 36 29	2291	103 50 17	2293	102 4 7	2294	100 17 58	2295
22	Sun W.	82 14 1	2625	83 52 22	2628	85 30 39	2630	87 8 53	2632
	Jupiter W.	33 34 58	2354	35 19 39	2356	37 4 17	2358	38 48 52	2361
	Pollux E.	54 51 28	2296	53 5 22	2298	51 19 19	2300	49 33 20	2302
	Regulus E.	91 27 46	2304	89 41 52	2306	87 56 1	2308	86 10 13	2311
23	Sun W.	95 19 12	2646	96 57 4	2649	98 34 52	2653	100 12 35	2657
	Jupiter W.	47 30 48	2375	49 14 59	2378	50 59 6	2381	52 43 8	2384
	α Arietis W.	35 10 34	2487	36 52 5	2477	38 33 51	2468	40 15 49	2460
	Mars W.	32 39 46	2522	34 20 29	2525	36 1 8	2528	37 41 42	2532
	Pollux E.	40 44 22	2317	38 58 48	2320	37 13 18	2324	35 27 54	2328
	Regulus E.	77 22 12	2324	75 36 48	2328	73 51 29	2331	72 6 15	2335
24	Sun W.	108 19 56	2676	109 57 8	2680	111 34 15	2684	113 11 16	2689
	Jupiter W.	61 22 3	2403	63 5 34	2406	64 49 0	2410	66 32 20	2415
	α Arietis W.	48 47 38	2442	50 30 13	2441	52 12 49	2441	53 55 26	2440
	Mars W.	46 3 18	2550	47 43 22	2554	49 23 20	2558	51 3 13	2562
	Regulus E.	63 21 23	2354	61 36 42	2358	59 52 7	2362	58 7 38	2367
25	Sun W.	121 14 44	2713	122 51 6	2719	124 27 20	2725	126 3 26	2731
	Jupiter W.	75 7 28	2437	76 50 10	2441	78 32 46	2447	80 15 14	2452
	α Arietis W.	62 28 21	2447	64 10 49	2450	65 53 13	2453	67 35 33	2456
	Mars W.	59 21 7	2585	61 0 22	2590	62 39 31	2595	64 18 33	2600
	Aldebaran W.	32 20 52	2543	34 1 6	2533	35 41 33	2525	37 22 11	2519
	Regulus E.	49 26 59	2393	47 43 14	2398	45 59 37	2405	44 16 9	2411
	Saturn E.	92 28 13	2356	90 43 35	2361	88 59 4	2366	87 14 40	2371
26	Jupiter W.	88 45 43	2480	90 27 25	2485	92 8 59	2492	93 50 24	2498
	α Arietis W.	76 5 54	2477	77 47 40	2482	79 29 18	2487	81 10 49	2492
	Mars W.	72 31 51	2629	74 10 7	2635	75 48 15	2641	77 26 14	2648
	Aldebaran W.	45 46 47	2510	47 27 47	2510	49 8 46	2512	50 49 43	2515
	Regulus E.	35 41 14	2448	33 58 48	2458	32 16 35	2467	30 34 35	2477
	Saturn E.	78 34 30	2397	76 50 51	2403	75 7 21	2409	73 23 59	2415
	Spica E.	89 37 45	2420	87 54 39	2426	86 11 41	2432	84 28 52	2438
27	Jupiter W.	102 15 11	2533	103 55 39	2540	105 35 57	2548	107 16 4	2555
	α Arietis W.	89 36 20	2525	91 16 59	2533	92 57 27	2540	94 37 45	2548
	Mars W.	85 33 53	2683	87 10 56	2691	88 47 48	2698	90 24 30	2706
	Aldebaran W.	59 13 26	2532	60 53 55	2538	62 34 15	2543	64 14 28	2549
	Saturn E.	64 49 26	2448	63 7 0	2456	61 24 45	2463	59 42 40	2470
	Spica E.	75 57 3	2472	74 15 10	2480	72 33 28	2487	70 51 56	2494
28	α Arietis W.	102 56 24	2591	104 35 31	2601	106 14 25	2611	107 53 5	2621
	Mars W.	98 25 18	2749	100 0 53	2758	101 36 16	2767	103 11 27	2776
	Aldebaran W.	72 33 22	2583	74 12 40	2591	75 51 47	2599	77 30 43	2608
	Pollux W.	28 23 34	2537	30 3 56	2545	31 44 7	2553	33 24 7	2561
	Saturn E.	51 14 58	2511	49 34 0	2520	47 53 15	2528	46 12 41	2538
	Spica E.	62 27 3	2535	60 46 39	2545	59 6 28	2554	57 26 30	2563
	Antares E.	108 19 30	2531	106 39 0	2540	104 58 42	2548	103 18 36	2557

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	22 50 31.38	9.347	S. 7 22 48.5	+57.10	16 10.35	65.41	12 26.18	0.508
Thur.	2	22 54 15.46	9.327	6 59 55.0	57.35	16 10.10	65.34	12 13.75	0.528
Frid.	3	22 57 59.06	9.307	6 36 55.7	57.59	16 9.86	65.27	12 0.83	0.548
Sat.	4	23 1 42.20	9.289	6 13 50.8	+57.81	16 9.60	65.20	11 47.46	0.566
SUN.	5	23 5 24.92	9.271	5 50 40.8	58.01	16 9.35	65.14	11 33.66	0.584
Mon.	6	23 9 7.20	9.254	5 27 26.1	58.21	16 9.09	65.08	11 19.43	0.601
Tues.	7	23 12 49.10	9.238	5 4 6.9	+58.39	16 8.83	65.02	11 4.82	0.617
Wed.	8	23 16 30.62	9.223	4 40 43.6	58.55	16 8.57	64.96	10 49.82	0.632
Thur.	9	23 20 11.80	9.209	4 17 16.6	58.69	16 8.30	64.91	10 34.48	0.645
Frid.	10	23 23 52.66	9.196	3 53 46.3	+58.82	16 8.03	64.86	10 18.84	0.659
Sat.	11	23 27 33 20	9.183	3 30 13.0	58.94	16 7.77	64.82	10 2.86	0.672
SUN.	12	23 31 13.44	9.171	3 6 37.1	59.04	16 7.49	64.77	9 46.60	0.683
Mon.	13	23 34 53.42	9.160	2 42 59.0	+59.12	16 7.22	64.73	9 30.07	0.694
Tues.	14	23 38 33.14	9.150	2 19 19.1	59.19	16 6.95	64.69	9 13.28	0.704
Wed.	15	23 42 12.64	9.141	1 55 37.7	59.25	16 6.68	64.66	8 56.27	0.713
Thur.	16	23 45 51.92	9.132	1 31 55.3	+59.28	16 6.41	64.63	8 39.04	0.722
Frid.	17	23 49 31.00	9.124	1 8 12.2	59.30	16 6.14	64.60	8 21.62	0.730
Sat.	18	23 53 9.90	9.117	0 44 28.8	59.30	16 5.87	64.57	8 4.01	0.738
SUN.	19	23 56 48.62	9.110	S. 0 20 45.6	+59.29	16 5.59	64.55	7 46.22	0.744
Mon.	20	0 0 27.19	9.105	N. 0 2 57.0	59.26	16 5.32	64.53	7 28.30	0.749
Tues.	21	0 4 5.63	9.099	0 26 38.8	59.21	16 5.05	64.52	7 10.25	0.755
Wed.	22	0 7 43.97	9.095	0 50 19.2	+59.15	16 4.78	64.50	6 52.08	0.759
Thur.	23	0 11 22.21	9.092	1 13 58.0	59.07	16 4.51	64.49	6 33.81	0.762
Frid.	24	0 15 0.37	9.089	1 37 34.7	58.98	16 4.24	64.48	6 15.46	0.766
Sat.	25	0 18 38.47	9.087	2 1 9.0	+58.87	16 3.97	64.48	5 57.05	0.768
SUN.	26	0 22 16.53	9.086	2 24 40.5	58.75	16 3.70	64.48	5 38.62	0.768
Mon.	27	0 25 54.59	9.086	2 48 8.8	58.61	16 3.43	64.48	5 20.17	0.769
Tues.	28	0 29 32.64	9.086	3 11 33.7	+58.46	16 3.16	64.49	5 1.72	0.768
Wed.	29	0 33 10.72	9.088	3 34 54.8	58.29	16 2.89	64.49	4 43.30	0.766
Thur.	30	0 36 48.86	9.090	3 58 11.8	58.11	16 2.61	64.50	4 24.93	0.764
Frid.	31	0 40 27.06	9.094	4 21 24.3	57.92	16 2.34	64.52	4 6.63	0.760
Sat.	32	0 44 5.37	9.098	N. 4 44 32.0	+57.71	16 2.06	64.53	3 48.43	0.756

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^{s}.18$ from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	22 50 29.44	9.349	S. 7 23 0.4	+57.10	12 26.29	0.506	22 38 3.15
Thur.	2	22 54 13.56	9.328	7 0 6.8	57.36	12 13.86	0.528	22 41 59.70
Frid.	3	22 57 57.20	9.309	6 37 7.3	57.59	12 0.94	0.548	22 45 56.26
Sat.	4	23 1 40.38	9.290	6 14 2.3	+57.82	11 47.57	0.566	22 49 52.81
SUN.	5	23 5 23.13	9.272	5 50 52.1	58.02	11 33.77	0.584	22 53 49.36
Mon.	6	23 9 5.46	9.256	5 27 37.1	58.22	11 19.54	0.601	22 57 45.92
Tues.	7	23 12 47.40	9.240	5 4 17.7	+58.39	11 4.93	0.617	23 1 42.47
Wed.	8	23 16 28.96	9.225	4 40 54.2	58.56	10 49.93	0.632	23 5 39.03
Thur.	9	23 20 10.18	9.211	4 17 27.0	58.70	10 34.60	0.645	23 9 35.58
Frid.	10	23 23 51.08	9.198	3 53 56.5	+58.84	10 18.95	0.659	23 13 32.13
Sat.	11	23 27 31.66	9.185	3 30 22.9	58.95	10 2.97	0.672	23 17 28.69
SUN.	12	23 31 11.95	9.173	3 6 46.8	59.05	9 46.71	0.683	23 21 25.24
Mon.	13	23 34 51.97	9.162	2 43 8.4	+59.14	9 30.18	0.694	23 25 21.79
Tues.	14	23 38 31.74	9.152	2 19 28.2	59.20	9 13.39	0.704	23 29 18.35
Wed.	15	23 42 11.28	9.143	1 55 46.6	59.26	8 56.38	0.713	23 33 14.90
Thur.	16	23 45 50.61	9.134	1 32 3.9	+59.29	8 39.15	0.722	23 37 11.46
Frid.	17	23 49 29.73	9.126	1 8 20.5	59.31	8 21.72	0.730	23 41 8.01
Sat.	18	23 53 8.67	9.119	0 44 36.8	59.31	8 4.11	0.738	23 45 4.56
SUN.	19	23 56 47.44	9.112	S. 0 20 53.4	+59.30	7 46.32	0.744	23 49 1.12
Mon.	20	0 0 26.06	9.107	N. 0 2 49.6	59.27	7 28.39	0.750	23 52 57.67
Tues.	21	0 4 4.56	9.101	0 26 31.7	59.23	7 10.34	0.755	23 56 54.22
Wed.	22	0 7 42.93	9.097	0 50 12.4	+59.16	6 52.17	0.759	0 0 50.78
Thur.	23	0 11 21.22	9.094	1 13 51.5	59.09	6 33.89	0.763	0 4 47.33
Frid.	24	0 14 59.42	9.091	1 37 28.5	58.99	6 15.54	0.766	0 8 43.88
Sat.	25	0 18 37.57	9.089	2 1 3.1	+58.88	5 57.13	0.768	0 12 40.44
SUN.	26	0 22 15.68	9.088	2 24 34.9	58.76	5 38.69	0.769	0 16 36.99
Mon.	27	0 25 53.78	9.087	2 48 3.6	58.62	5 20.24	0.769	0 20 33.54
Tues.	28	0 29 31.88	9.088	3 11 28.8	+58.47	5 1.78	0.768	0 24 30.10
Wed.	29	0 33 10.01	9.090	3 34 50.2	58.31	4 43.36	0.766	0 28 26.65
Thur.	30	0 36 48.19	9.092	3 58 7.5	58.13	4 24.99	0.764	0 32 23.20
Frid.	31	0 40 26.44	9.096	4 21 20.3	57.94	4 6.68	0.761	0 36 19.76
Sat.	32	0 44 4.79	9.100	N. 4 44 28.4	+57.73	3 48.48	0.756	0 40 16.31

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

Diff. for 1 Hour,
+9ˢ.8565.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
1	60	341° 10′ 10″.2	10′ 10″.0	150″.34	+ 0″.48	9.9962482	+45.1	1ʰ 21ᵐ 43ˢ.42
2	61	342 10 17.4	10 17.1	150.26	0.42	9.9963574	45.9	1 17 47.52
3	62	343 10 22.7	10 22.2	150.18	0.33	9.9964683	46.5	1 13 51.61
4	63	344 10 26.1	10 25.6	150.11	+ 0.22	9.9965808	+47.2	1 9 55.70
5	64	345 10 27.8	10 27.1	150.04	+ 0.10	9.9966949	47.8	1 5 59.80
6	65	346 10 27.8	10 27.0	149.96	− 0.03	9.9968104	48.4	1 2 3.88
7	66	347 10 26.1	10 25.2	149.89	− 0.16	9.9969272	+48.9	0 58 7.98
8	67	348 10 22.7	10 21.7	149.82	0.28	9.9970453	49.4	0 54 12.07
9	68	349 10 17.7	10 16.6	149.76	0.39	9.9971644	49.8	0 50 16.16
10	69	350 10 11.0	10 9.8	149.69	− 0.48	9.9972844	+50.1	0 46 20.26
11	70	351 10 2.7	10 1.3	149.62	0.55	9.9974051	50.4	0 42 24.34
12	71	352 9 52.7	9 51.2	149.55	0.59	9.9975264	50.6	0 38 28.44
13	72	353 9 40.9	9 39.3	149.47	− 0.60	9.9976481	+50.8	0 34 32.54
14	73	354 9 27.4	9 25.7	149.40	0.58	9.9977702	50.9	0 30 36.62
15	74	355 9 12.2	9 10.4	149.33	0.54	9.9978924	50.9	0 26 40.72
16	75	356 8 55.1	8 53.2	149.25	− 0.47	9.9980146	+50.9	0 22 44.80
17	76	357 8 36.1	8 34.1	149.17	0.37	9.9981367	50.8	0 18 48.90
18	77	358 8 15.1	8 13.0	149.08	0.25	9.9982586	50.8	0 14 52.99
19	78	359 7 51.9	7 49.7	148.99	− 0.12	9.9983805	+50.8	0 10 57.08
20	79	0 7 26.6	7 24.3	148.90	+ 0.01	9.9985022	50.7	0 7 1.18
21	80	1 6 59.1	6 56.7	148.81	0.14	9.9986238	50.6	0 3 5.27 23 59 9.36
22	81	2 6 29.4	6 26.9	148.71	+ 0.26	9.9987453	+50.6	23 55 13.45
23	82	3 5 57.5	5 54.9	148.62	0.37	9.9988668	50.6	23 51 17.55
24	83	4 5 23.3	5 20.5	148.52	0.45	9.9989883	50.6	23 47 21.64
25	84	5 4 46.7	4 43.8	148.42	+ 0.51	9.9991099	+50.7	23 43 25.73
26	85	6 4 7.7	4 4.7	148.32	0.55	9.9992318	50.9	23 39 29.82
27	86	7 3 26.3	3 23.2	148.23	0.56	9.9993541	51.0	23 35 33.92
28	87	8 2 42.7	2 39.5	148.14	+ 0.54	9.9994768	+51.2	23 31 38.00
29	88	9 1 56.9	1 53.6	148.05	0.49	9.9996000	51.4	23 27 42.10
30	89	10 1 8.9	1 5.5	147.95	0.41	9.9997237	51.6	23 23 46.20
31	90	11 0 18.7	0 15.2	147.86	0.30	9.9998479	51.9	23 19 50.28
32	91	11 59 26.4	59 22.8	147.78	+ 0.17	9.9999726	+52.1	23 15 54.38

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0ᵈ.0.

Diff. for 1 Hour, — 9ˢ.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 37.4	15 33.1	57 13.6	−1.27	56 58.0	−1.32	11 47.8	1.96	12.8
2	15 28.8	15 24.0	56 41.9	1.36	56 25.5	1.38	12 33.3	1.84	13.8
3	15 20.0	15 15.3	56 8.9	1.37	55 52.5	1.35	13 16.3	1.75	14.8
4	15 10.9	15 6.8	55 36.5	−1.30	55 21.2	−1.24	13 57.8	1.71	15.8
5	15 2.9	14 59.3	55 6.8	1.15	54 53.7	1.03	14 39.1	1.72	16.8
6	14 56.1	14 53.4	54 42.0	0.91	54 31.9	0.76	15 21.0	1.78	17.8
7	14 51.1	14 49.5	54 23.8	−0.59	54 17.8	−0.41	16 4.6	1.86	18.8
8	14 48.5	14 48.1	54 14.0	−0.21	54 12.7	−0.01	16 50.5	1.97	19.8
9	14 48.4	14 49.4	54 13.7	+0.20	54 17.4	+0.41	17 38.9	2.07	20.8
10	14 51.1	14 53.5	54 23.6	+0.63	54 32.6	+0.85	18 29.9	2.17	21.8
11	14 56.7	15 0.4	54 44.1	1.05	54 57.9	1.25	19 22.7	2.22	22.8
12	15 4.9	15 9.9	55 14.2	1.45	55 32.6	1.61	20 16.2	2.22	23.8
13	15 15.4	15 21.4	55 52.9	+1.76	56 14.9	+1.88	21 9.1	2.18	24.8
14	15 27.7	15 34.3	56 38.1	1.97	57 2.1	2.02	22 0.7	2.12	25.8
15	15 40.9	15 47.5	57 26.5	2.03	57 50.8	2.00	22 50.8	2.05	26.8
16	15 54.0	16 0.1	58 14.6	+1.93	58 37.1	+1.81	23 39.5	2.02	27.8
17	16 5.8	16 11.0	58 58.1	1.66	59 16.9	1.46	6		28.8
18	16 15.4	16 19.0	59 33.1	1.23	59 46.4	0.98	0 27.9	2.02	0.3
19	16 21.8	16 23.6	59 56.6	+0.71	60 3.5	+0.44	1 16.9	2.07	1.3
20	16 24.6	16 24.7	60 7.1	+0.16	60 7.4	−0.10	2 7.7	2.17	2.3
21	16 24.0	16 22.5	60 4.7	−0.34	59 59.2	0.56	3 1.5	2.31	3.3
22	16 20.3	16 17.5	59 51.2	−0.76	59 41.0	−0.93	3 58.8	2.46	4.3
23	16 14.2	16 10.7	59 29.0	1.05	59 15.8	1.15	4 59.2	2.56	5.3
24	16 6.7	16 2.6	59 1.4	1.23	58 46.3	1.28	6 1.2	2.58	6.3
25	15 58.4	15 54.0	58 30.7	−1.31	58 14.8	−1.33	7 2.4	2.50	7.3
26	15 49.7	15 45.3	57 58.7	1.34	57 42.7	1.33	8 0.5	2.33	8.3
27	15 41.0	15 36.7	57 26.9	1.31	57 11.2	1.30	8 54.3	2.15	9.3
28	15 32.5	15 28.4	56 55.8	−1.28	56 40.6	−1.25	9 43.8	1.98	10.3
29	15 24.4	15 20.4	56 25.8	1.23	56 11.2	1.20	10 29.5	1.84	11.3
30	15 16.5	15 12.8	55 57.0	1.17	55 43.2	1.13	11 12.5	1.75	12.3
31	15 9.1	15 5.6	55 29.9	1.09	55 17.0	1.04	11 54.0	1.71	13.3
32	15 2.3	14 59.2	55 4.9	−0.98	54 53.4	−0.92	12 35.0	1.71	14.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 1.					**FRIDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 3 2.97	2.1375	N.16 49 16.0	12.853	0	11 39 25.08	1.9033	N. 5 33 19.2	14.803
1	10 5 11.03	2.1312	16 36 22.6	12.926	1	11 41 19.18	1.9002	5 18 30.7	14.813
2	10 7 18.71	2.1249	16 23 24.9	12.998	2	11 43 13.10	1.8971	5 3 41.6	14.822
3	10 9 26.02	2.1187	16 10 22.9	13.068	3	11 45 6.83	1.8940	4 48 52.0	14.830
4	10 11 32.96	2.1126	15 57 16.7	13.137	4	11 47 0.38	1.8911	4 34 2.0	14.838
5	10 13 39.53	2.1064	15 44 6.4	13.204	5	11 48 53.76	1.8882	4 19 11.5	14.844
6	10 15 45.73	2.1003	15 30 52.2	13.269	6	11 50 46.96	1.8853	4 4 20.7	14.848
7	10 17 51.57	2.0943	15 17 34.1	13.334	7	11 52 39.99	1.8826	3 49 29.7	14.852
8	10 19 57.05	2.0883	15 4 12.1	13.397	8	11 54 32.87	1.8800	3 34 38.5	14.854
9	10 22 2.17	2.0824	14 50 46.4	13.458	9	11 56 25.59	1.8774	3 19 47.2	14.855
10	10 24 6.94	2.0766	14 37 17.1	13.518	10	11 58 18.16	1.8749	3 4 55.9	14.856
11	10 26 11.36	2.0708	14 23 44.2	13.577	11	12 0 10.58	1.8724	2 50 4.5	14.856
12	10 28 15.44	2.0651	14 10 7.9	13.633	12	12 2 2.85	1.8700	2 35 13.2	14.854
13	10 30 19.17	2.0594	13 56 28.2	13.689	13	12 3 54.98	1.8678	2 20 22.1	14.851
14	10 32 22.57	2.0538	13 42 45.2	13.743	14	12 5 46.98	1.8656	2 5 31.1	14.848
15	10 34 25.63	2.0482	13 28 59.0	13.797	15	12 7 38.85	1.8634	1 50 40.3	14.844
16	10 36 28.36	2.0428	13 15 9.6	13.848	16	12 9 30.59	1.8613	1 35 49.8	14.838
17	10 38 30.77	2.0374	13 1 17.2	13.897	17	12 11 22.21	1.8592	1 20 59.7	14.832
18	10 40 32.85	2.0320	12 47 21.9	13.946	18	12 13 13.70	1.8573	1 6 10.0	14.824
19	10 42 34.61	2.0267	12 33 23.7	13.993	19	12 15 5.08	1.8555	0 51 20.8	14.816
20	10 44 36.06	2.0215	12 19 22.7	14.039	20	12 16 56.36	1.8537	0 36 32.1	14.807
21	10 46 37.19	2.0163	12 5 19.0	14.083	21	12 18 47.53	1.8520	0 21 44.0	14.796
22	10 48 38.02	2.0112	11 51 12.7	14.127	22	12 20 38.60	1.8504	N. 0 6 56.6	14.784
23	10 50 38.54	2.0062	N.11 37 3.8	14.169	23	12 22 29.58	1.8488	S. 0 7 50.1	14.772
	THURSDAY 2.					**SATURDAY 4.**			
0	10 52 38.76	2.0012	N.11 22 52.4	14.210	0	12 24 20.46	1.8472	S. 0 22 36.1	14.760
1	10 54 38.68	1.9963	11 8 38.6	14.249	1	12 26 11.25	1.8458	0 37 21.3	14.746
2	10 56 38.31	1.9915	10 54 22.5	14.286	2	12 28 1.96	1.8445	0 52 5.6	14.730
3	10 58 37.66	1.9868	10 40 4.3	14.322	3	12 29 52.59	1.8433	1 6 48.9	14.713
4	11 0 36.73	1.9822	10 25 43.9	14.358	4	12 31 43.15	1.8421	1 21 31.2	14.697
5	11 2 35.52	1.9775	10 11 21.4	14.392	5	12 33 33.64	1.8409	1 36 12.5	14.680
6	11 4 34.03	1.9729	9 56 56.9	14.424	6	12 35 24.06	1.8398	1 50 52.8	14.662
7	11 6 32.27	1.9685	9 42 30.5	14.456	7	12 37 14.42	1.8388	2 5 32.0	14.642
8	11 8 30.25	1.9641	9 28 2.2	14.486	8	12 39 4.72	1.8379	2 20 9.9	14.621
9	11 10 27.96	1.9597	9 13 32.2	14.514	9	12 40 54.97	1.8371	2 34 46.5	14.599
10	11 12 25.41	1.9554	8 59 0.5	14.542	10	12 42 45.17	1.8363	2 49 21.8	14.577
11	11 14 22.61	1.9512	8 44 27.2	14.568	11	12 44 35.32	1.8355	3 3 55.8	14.555
12	11 16 19.56	1.9471	8 29 52.3	14.594	12	12 46 25.43	1.8349	3 18 28.4	14.532
13	11 18 16.26	1.9430	8 15 15.9	14.618	13	12 48 15.51	1.8344	3 32 59.6	14.507
14	11 20 12.72	1.9391	8 0 38.1	14.640	14	12 50 5.56	1.8338	3 47 29.2	14.480
15	11 22 8.95	1.9352	7 45 59.1	14.661	15	12 51 55.57	1.8333	4 1 57.2	14.453
16	11 24 4.95	1.9314	7 31 18.8	14.682	16	12 53 45.56	1.8330	4 16 23.6	14.426
17	11 26 0.72	1.9276	7 16 37.3	14.702	17	12 55 35.53	1.8327	4 30 48.4	14.399
18	11 27 56.26	1.9239	7 1 54.6	14.720	18	12 57 25.48	1.8324	4 45 11.5	14.371
19	11 29 51.59	1.9203	6 47 10.9	14.737	19	12 59 15.42	1.8322	4 59 32.9	14.341
20	11 31 46.70	1.9167	6 32 26.2	14.752	20	13 1 5.35	1.8322	5 13 52.4	14.309
21	11 33 41.60	1.9133	6 17 40.7	14.766	21	13 2 55.28	1.8322	5 28 10.0	14.278
22	11 35 36.30	1.9099	6 2 54.3	14.780	22	13 4 45.21	1.8322	5 42 25.7	14.246
23	11 37 30.79	1.9065	5 48 7.1	14.792	23	13 6 35.15	1.8323	5 56 39.5	14.213
24	11 39 25.08	1.9033	N. 5 33 19.2	14.803	24	13 8 25.09	1.8325	S. 6 10 51.3	14.179

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 8 25.09	1.8325	S. 6 10 51.3	14.179
1	13 10 15.05	1.8327	6 25 1.0	14.144
2	13 12 5.02	1.8330	6 39 8.6	14.109
3	13 13 55.01	1.8333	6 53 14.1	14.073
4	13 15 45.02	1.8338	7 7 17.4	14.036
5	13 17 35.07	1.8344	7 21 18.4	13.997
6	13 19 25.15	1.8349	7 35 17.1	13.958
7	13 21 15.26	1.8355	7 49 13.4	13.919
8	13 23 5.41	1.8363	8 3 7.4	13.880
9	13 24 55.61	1.8371	8 16 59.0	13.839
10	13 26 45.86	1.8379	8 30 48.1	13.797
11	13 28 36.16	1.8388	8 44 34.6	13.753
12	13 30 26.51	1.8397	8 58 18.5	13.710
13	13 32 16.92	1.8407	9 11 59.8	13.666
14	13 34 7.40	1.8418	9 25 38.4	13.622
15	13 35 57.94	1.8429	9 39 14.4	13.577
16	13 37 48.55	1.8441	9 52 47.6	13.530
17	13 39 39.24	1.8454	10 6 18.0	13.482
18	13 41 30.00	1.8467	10 19 45.5	13.434
19	13 43 20.84	1.8481	10 33 10.1	13.386
20	13 45 11.77	1.8497	10 46 31.8	13.337
21	13 47 2.80	1.8512	10 59 50.5	13.286
22	13 48 53.92	1.8527	11 13 6.1	13.235
23	13 50 45.13	1.8543	S. 11 26 18.7	13.184

MONDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 52 36.44	1.8561	S. 11 39 28.2	13.132
1	13 54 27.86	1.8578	11 52 34.5	13.078
2	13 56 19.38	1.8596	12 5 37.6	13.024
3	13 58 11.01	1.8615	12 18 37.4	12.969
4	14 0 2.76	1.8634	12 31 33.9	12.913
5	14 1 54.62	1.8653	12 44 27.0	12.857
6	14 3 46.60	1.8674	12 57 16.8	12.801
7	14 5 38.71	1.8696	13 10 3.1	12.743
8	14 7 30.95	1.8717	13 22 45.9	12.684
9	14 9 23.31	1.8739	13 35 25.2	12.625
10	14 11 15.81	1.8762	13 48 0.9	12.565
11	14 13 8.45	1.8785	14 0 33.0	12.505
12	14 15 1.23	1.8809	14 13 1.5	12.443
13	14 16 54.16	1.8833	14 25 26.2	12.380
14	14 18 47.23	1.8857	14 37 47.1	12.318
15	14 20 40.45	1.8883	14 50 4.3	12.255
16	14 22 33.83	1.8909	15 2 17.7	12.190
17	14 24 27.36	1.8935	15 14 27.1	12.124
18	14 26 21.05	1.8962	15 26 32.6	12.058
19	14 28 14.91	1.8990	15 38 34.1	11.992
20	14 30 8.93	1.9018	15 50 31.6	11.925
21	14 32 3.12	1.9046	16 2 25.1	11.857
22	14 33 57.48	1.9075	16 14 14.5	11.788
23	14 35 52.02	1.9104	16 25 59.7	11.718
24	14 37 46.73	1.9134	S. 16 37 40.6	11.647

TUESDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 37 46.73	1.9134	S. 16 37 40.6	11.647
1	14 39 41.63	1.9165	16 49 17.3	11.577
2	14 41 36.71	1.9195	17 0 49.8	11.505
3	14 43 31.97	1.9226	17 12 17.9	11.432
4	14 45 27.42	1.9258	17 23 41.6	11.359
5	14 47 23.07	1.9291	17 35 0.9	11.285
6	14 49 18.91	1.9324	17 46 15.8	11.210
7	14 51 14.95	1.9357	17 57 26.1	11.134
8	14 53 11.19	1.9389	18 8 31.8	11.058
9	14 55 7.62	1.9422	18 19 33.0	10.981
10	14 57 4.26	1.9457	18 30 29.5	10.903
11	14 59 1.11	1.9492	18 41 21.3	10.824
12	15 0 58.16	1.9527	18 52 8.4	10.745
13	15 2 55.43	1.9564	19 2 50.7	10.665
14	15 4 52.91	1.9598	19 13 28.2	10.584
15	15 6 50.61	1.9634	19 24 0.8	10.502
16	15 8 48.52	1.9671	19 34 28.4	10.419
17	15 10 46.66	1.9708	19 44 51.1	10.336
18	15 12 45.02	1.9746	19 55 8.8	10.252
19	15 14 43.61	1.9783	20 5 21.4	10.167
20	15 16 42.42	1.9820	20 15 28.9	10.082
21	15 18 41.45	1.9858	20 25 31.3	9.997
22	15 20 40.71	1.9897	20 35 28.5	9.909
23	15 22 40.21	1.9936	S. 20 45 20.4	9.821

WEDNESDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 24 39.94	1.9975	S. 20 55 7.0	9.739
1	15 26 39.91	2.0014	21 4 48.3	9.643
2	15 28 40.11	2.0053	21 14 24.2	9.553
3	15 30 40.55	2.0093	21 23 54.7	9.463
4	15 32 41.23	2.0133	21 33 19.7	9.371
5	15 34 42.15	2.0174	21 42 39.2	9.278
6	15 36 43.32	2.0215	21 51 53.1	9.185
7	15 38 44.73	2.0255	22 1 1.4	9.091
8	15 40 46.38	2.0296	22 10 4.0	8.997
9	15 42 48.28	2.0337	22 19 1.0	8.902
10	15 44 50.43	2.0379	22 27 52.2	8.805
11	15 46 52.83	2.0420	22 36 37.6	8.708
12	15 48 55.47	2.0461	22 45 17.2	8.611
13	15 50 58.36	2.0503	22 53 50.9	8.512
14	15 53 1.51	2.0546	23 2 18.6	8.412
15	15 55 4.91	2.0587	23 10 40.3	8.312
16	15 57 8.56	2.0629	23 18 56.0	8.212
17	15 59 12.46	2.0672	23 27 5.7	8.110
18	16 1 16.62	2.0714	23 35 9.2	8.007
19	16 3 21.03	2.0756	23 43 6.5	7.903
20	16 5 25.69	2.0798	23 50 57.6	7.800
21	16 7 30.61	2.0841	23 58 42.5	7.695
22	16 9 35.78	2.0883	24 6 21.0	7.589
23	16 11 41.21	2.0926	24 13 53.2	7.483
24	16 13 46.89	2.0968	S. 24 21 19.0	7.377

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 9.					SATURDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	16 13 46.89	2.0968	S.24 21 19.0	7.377	0	17 58 57.99	2.2719	S.27 58 11.6	1.404
1	16 15 52.83	2.1011	24 28 38.4	7.268	1	18 1 14.38	2.2743	27 59 31.7	1.265
2	16 17 59.02	2.1053	24 35 51.2	7.159	2	18 3 30.91	2.2768	28 0 43.4	1.125
3	16 20 5.46	2.1095	24 42 57.5	7.050	3	18 5 47.59	2.2792	28 1 46.7	0.985
4	16 22 12.16	2.1137	24 49 57.2	6.940	4	18 8 4.41	2.2814	28 2 41.6	0.844
5	16 24 19.11	2.1180	24 56 50.3	6.830	5	18 10 21.36	2.2836	28 3 28.0	0.703
6	16 26 26.32	2.1222	25 3 36.8	6.719	6	18 12 38.44	2.2857	28 4 6.0	0.562
7	16 28 33.78	2.1264	25 10 16.6	6.606	7	18 14 55.65	2.2878	28 4 35.5	0.420
8	16 30 41.49	2.1306	25 16 49.5	6.492	8	18 17 12.98	2.2897	28 4 56.4	0.278
9	16 32 49.45	2.1348	25 23 15.6	6.378	9	18 19 30.42	2.2916	28 5 8.8	− 0.135
10	16 34 57.66	2.1389	25 29 34.9	6.264	10	18 21 47.97	2.2934	28 5 12.6	+ 0.007
11	16 37 6.12	2.1431	25 35 47.3	6.148	11	18 24 5.63	2.2952	28 5 7.9	0.150
12	16 39 14.83	2.1472	25 41 52.7	6.032	12	18 26 23.40	2.2970	28 4 54.6	0.294
13	16 41 23.79	2.1513	25 47 51.1	5.915	13	18 28 41.27	2.2986	28 4 32.6	0.438
14	16 43 32.99	2.1554	25 53 42.5	5.798	14	18 30 59.23	2.3000	28 4 2.0	0.582
15	16 45 42.44	2.1595	25 59 26.9	5.681	15	18 33 17.27	2.3014	28 3 22.8	0.726
16	16 47 52.13	2.1635	26 5 4.2	5.562	16	18 35 35.40	2.3028	28 2 34.9	0.871
17	16 50 2.06	2.1675	26 10 34.3	5.441	17	18 37 53.61	2.3042	28 1 38.3	1.017
18	16 52 12.23	2.1715	26 15 57.1	5.320	18	18 40 11.90	2.3054	28 0 32.9	1.162
19	16 54 22.64	2.1755	26 21 12.7	5.199	19	18 42 30.26	2.3065	27 59 18.8	1.307
20	16 56 33.29	2.1794	26 26 21.0	5.077	20	18 44 48.68	2.3076	27 57 56.0	1.452
21	16 58 44.17	2.1833	26 31 22.0	4.955	21	18 47 7.17	2.3087	27 56 24.5	1.598
22	17 0 55.28	2.1872	26 36 15.6	4.832	22	18 49 25.72	2.3095	27 54 44.2	1.744
23	17 3 6.63	2.1911	S.26 41 1.8	4.707	23	18 51 44.31	2.3103	S.27 52 55.2	1.890
	FRIDAY 10.					SUNDAY 12.			
0	17 5 18.21	2.1949	S.26 45 40.5	4.582	0	18 54 2.95	2.3110	S.27 50 57.4	2.037
1	17 7 30.01	2.1986	26 50 11.7	4.457	1	18 56 21.63	2.3117	27 48 50.8	2.183
2	17 9 42.04	2.2023	26 54 35.4	4.332	2	18 58 40.35	2.3122	27 46 35.4	2.330
3	17 11 54.29	2.2060	26 58 51.5	4.205	3	19 0 59.10	2.3127	27 44 11.2	2.477
4	17 14 6.76	2.2097	27 3 0.0	4.077	4	19 3 17.88	2.3132	27 41 38.2	2.623
5	17 16 19.45	2.2133	27 7 0.8	3.949	5	19 5 36.68	2.3136	27 38 56.4	2.770
6	17 18 32.36	2.2169	27 10 53.9	3.821	6	19 7 55.51	2.3139	27 36 5.8	2.917
7	17 20 45.48	2.2204	27 14 39.3	3.692	7	19 10 14.35	2.3140	27 33 6.4	3.063
8	17 22 58.81	2.2238	27 18 16.9	3.562	8	19 12 33.19	2.3141	27 29 58.2	3.211
9	17 25 12.34	2.2273	27 21 46.7	3.432	9	19 14 52.04	2.3142	27 26 41.1	3.358
10	17 27 26.08	2.2307	27 25 8.7	3.300	10	19 17 10.89	2.3141	27 23 15.2	3.505
11	17 29 40.02	2.2340	27 28 22.7	3.168	11	19 19 29.73	2.3139	27 19 40.5	3.652
12	17 31 54.16	2.2372	27 31 26.8	3.035	12	19 21 48.56	2.3137	27 15 57.0	3.798
13	17 34 8.49	2.2404	27 34 26.9	2.903	13	19 24 7.38	2.3135	27 12 4.7	3.945
14	17 36 23.01	2.2436	27 37 17.1	2.770	14	19 26 26.18	2.3132	27 8 3.6	4.092
15	17 38 37.72	2.2467	27 39 59.3	2.636	15	19 28 44.96	2.3128	27 3 53.7	4.238
16	17 40 52.62	2.2498	27 42 33.4	2.500	16	19 31 3.71	2.3123	26 59 35.0	4.385
17	17 43 7.70	2.2528	27 44 59.3	2.364	17	19 33 22.43	2.3117	26 55 7.5	4.531
18	17 45 22.95	2.2557	27 47 17.1	2.229	18	19 35 41.11	2.3110	26 50 31.3	4.677
19	17 47 38.38	2.2586	27 49 26.8	2.093	19	19 37 59.75	2.3103	26 45 46.3	4.823
20	17 49 53.98	2.2614	27 51 28.3	1.956	20	19 40 18.34	2.3095	26 40 52.6	4.968
21	17 52 9.74	2.2641	27 53 21.5	1.818	21	19 42 36.89	2.3087	26 35 50.1	5.114
22	17 54 25.67	2.2667	27 55 6.5	1.681	22	19 44 55.39	2.3078	26 30 38.9	5.259
23	17 56 41.75	2.2693	27 56 43.2	1.543	23	19 47 13.83	2.3068	26 25 19.0	5.404
24	17 58 57.99	2.2719	S.27 58 11.6	1.404	24	19 49 32.20	2.3057	S.26 19 50.4	5.549

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 49 32.20	2.3057	S. 26 19 50.4	5.549
1	19 51 50.51	2.3046	26 14 13.1	5.694
2	19 54 8.75	2.3034	26 8 27.1	5.838
3	19 56 26.92	2.3022	26 2 32.5	5.982
4	19 58 45.01	2.3009	25 56 29.3	6.125
5	20 1 3.02	2.2995	25 50 17.5	6.269
6	20 3 20.95	2.2981	25 43 57.0	6.412
7	20 5 38.79	2.2966	25 37 28.0	6.555
8	20 7 56.54	2.2951	25 30 50.4	6.697
9	20 10 14.20	2.2935	25 24 4.3	6.839
10	20 12 31.76	2.2918	25 17 9.7	6.981
11	20 14 49.22	2.2901	25 10 6.6	7.122
12	20 17 6.57	2.2883	25 2 55.1	7.262
13	20 19 23.82	2.2866	24 55 35.1	7.402
14	20 21 40.96	2.2847	24 48 6.8	7.542
15	20 23 57.98	2.2828	24 40 30.1	7.681
16	20 26 14.89	2.2808	24 32 45.1	7.819
17	20 28 31.68	2.2788	24 24 51.8	7.958
18	20 30 48.35	2.2768	24 16 50.2	8.096
19	20 33 4.90	2.2747	24 8 40.3	8.232
20	20 35 21.32	2.2726	24 0 22.3	8.368
21	20 37 37.61	2.2704	23 51 56.1	8.504
22	20 39 53.77	2.2683	23 43 21.8	8.639
23	20 42 9.80	2.2661	S. 23 34 39.4	8.774

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 44 25.70	2.2638	S. 23 25 48.9	8.908
1	20 46 41.46	2.2615	23 16 50.4	9.042
2	20 48 57.08	2.2592	23 7 43.9	9.174
3	20 51 12.57	2.2569	22 58 29.5	9.306
4	20 53 27.91	2.2545	22 49 7.2	9.437
5	20 55 43.11	2.2521	22 39 37.1	9.568
6	20 57 58.16	2.2497	22 29 59.1	9.698
7	21 0 13.07	2.2473	22 20 13.3	9.827
8	21 2 27.83	2.2448	22 10 19.8	9.955
9	21 4 42.44	2.2423	22 0 18.7	10.083
10	21 6 56.91	2.2398	21 50 9.9	10.210
11	21 9 11.22	2.2373	21 39 53.5	10.336
12	21 11 25.38	2.2347	21 29 29.6	10.461
13	21 13 39.39	2.2322	21 18 58.2	10.586
14	21 15 53.25	2.2297	21 8 19.3	10.709
15	21 18 6.95	2.2271	20 57 33.1	10.832
16	21 20 20.50	2.2246	20 46 39.5	10.954
17	21 22 33.90	2.2220	20 35 38.6	11.075
18	21 24 47.14	2.2194	20 24 30.5	11.195
19	21 27 0.23	2.2168	20 13 15.2	11.314
20	21 29 13.16	2.2142	20 1 52.8	11.432
21	21 31 25.94	2.2117	19 50 23.3	11.550
22	21 33 38.56	2.2091	19 38 46.8	11.667
23	21 35 51.03	2.2066	19 27 3.3	11.782
24	21 38 3.35	2.2040	S. 19 15 12.9	11.897

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 38 3.35	2.2040	S. 19 15 12.9	11.897
1	21 40 15.51	2.2014	19 3 15.7	12.010
2	21 42 27.52	2.1989	18 51 11.7	12.123
3	21 44 39.38	2.1964	18 39 0.9	12.236
4	21 46 51.09	2.1938	18 26 43.4	12.346
5	21 49 2.64	2.1913	18 14 19.4	12.454
6	21 51 14.04	2.1888	18 1 48.9	12.563
7	21 53 25.29	2.1863	17 49 11.9	12.671
8	21 55 36.40	2.1839	17 36 28.4	12.778
9	21 57 47.36	2.1814	17 23 36.5	12.884
10	21 59 58.17	2.1790	17 10 42.3	12.988
11	22 2 8.84	2.1766	16 57 39.9	13.092
12	22 4 19.36	2.1742	16 44 31.3	13.194
13	22 6 29.74	2.1719	16 31 16.6	13.295
14	22 8 39.98	2.1696	16 17 55.9	13.395
15	22 10 50.09	2.1673	16 4 29.2	13.494
16	22 13 0.06	2.1650	15 50 56.6	13.592
17	22 15 9.89	2.1627	15 37 18.2	13.688
18	22 17 19.58	2.1604	15 23 34.1	13.783
19	22 19 29.14	2.1583	15 9 44.3	13.878
20	22 21 38.58	2.1562	14 55 48.8	13.972
21	22 23 47.89	2.1542	14 41 47.7	14.063
22	22 25 57.08	2.1521	14 27 41.2	14.153
23	22 28 6.14	2.1500	S. 14 13 29.3	14.243

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 30 15.08	2.1480	S. 13 59 12.0	14.332
1	22 32 23.90	2.1461	13 44 49.5	14.419
2	22 34 32.61	2.1442	13 30 21.8	14.505
3	22 36 41.20	2.1423	13 15 48.9	14.590
4	22 38 49.68	2.1405	13 1 11.0	14.673
5	22 40 58.06	2.1387	12 46 28.2	14.754
6	22 43 6.33	2.1370	12 31 40.5	14.835
7	22 45 14.50	2.1353	12 16 48.0	14.915
8	22 47 22.57	2.1336	12 1 50.7	14.993
9	22 49 30.54	2.1320	11 46 48.8	15.070
10	22 51 38.41	2.1305	11 31 42.3	15.146
11	22 53 46.20	2.1291	11 16 31.3	15.220
12	22 55 53.90	2.1276	11 1 15.9	15.293
13	22 58 1.51	2.1262	10 45 56.1	15.365
14	23 0 9.04	2.1249	10 30 32.1	15.434
15	23 2 16.50	2.1236	10 15 4.0	15.503
16	23 4 23.88	2.1224	9 59 31.8	15.571
17	23 6 31.19	2.1213	9 43 55.5	15.637
18	23 8 38.44	2.1203	9 28 15.3	15.702
19	23 10 45.62	2.1192	9 12 31.2	15.766
20	23 12 52.74	2.1182	8 56 43.4	15.827
21	23 14 59.80	2.1172	8 40 52.0	15.887
22	23 17 6.80	2.1163	8 24 57.0	15.947
23	23 19 13.76	2.1156	8 8 58.4	16.005
24	23 21 20.67	2.1149	S. 7 52 56.4	16.061

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 21 20.67	2.1149	S. 7 52 56.4	16.061
1	23 23 27.54	2.1142	7 36 51.1	16.115
2	23 25 34.37	2.1135	7 20 42.6	16.168
3	23 27 41.16	2.1129	7 4 30.9	16.221
4	23 29 47.92	2.1125	6 48 16.1	16.271
5	23 31 54.66	2.1122	6 31 58.4	16.319
6	23 34 1.38	2.1118	6 15 37.8	16.367
7	23 36 8.08	2.1115	5 59 14.3	16.413
8	23 38 14.76	2.1112	5 42 48.2	16.457
9	23 40 21.42	2.1110	5 26 19.5	16.499
10	23 42 28.08	2.1110	5 9 48.3	16.541
11	23 44 34.74	2.1111	4 53 14.6	16.581
12	23 46 41.41	2.1112	4 36 38.6	16.618
13	23 48 48.08	2.1113	4 20 0.4	16.655
14	23 50 54.76	2.1114	4 3 20.0	16.691
15	23 53 1.45	2.1117	3 46 37.5	16.724
16	23 55 8.16	2.1121	3 29 53.1	16.756
17	23 57 14.90	2.1125	3 13 6.8	16.787
18	23 59 21.66	2.1129	2 56 18.7	16.816
19	0 1 28.45	2.1135	2 39 28.9	16.843
20	0 3 35.28	2.1142	2 22 37.6	16.868
21	0 5 42.16	2.1150	2 5 44.8	16.892
22	0 7 49.08	2.1158	1 48 50.6	16.914
23	0 9 56.05	2.1166	S. 1 31 55.1	16.934

SATURDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 12 3.07	2.1175	S. 1 14 58.5	16.953
1	0 14 10.15	2.1185	0 58 0.8	16.971
2	0 16 17.29	2.1196	0 41 2.0	16.987
3	0 18 24.50	2.1208	0 24 2.3	17.001
4	0 20 31.79	2.1221	S. 0 7 1.9	17.012
5	0 22 39.15	2.1233	N. 0 9 59.2	17.023
6	0 24 46.59	2.1247	0 27 0.9	17.032
7	0 26 54.11	2.1262	0 44 3.1	17.040
8	0 29 1.73	2.1278	1 1 5.7	17.045
9	0 31 9.45	2.1295	1 18 8.5	17.048
10	0 33 17.27	2.1312	1 35 11.5	17.051
11	0 35 25.19	2.1329	1 52 14.6	17.053
12	0 37 33.22	2.1347	2 9 17.8	17.052
13	0 39 41.36	2.1367	2 26 20.8	17.048
14	0 41 49.62	2.1388	2 43 23.5	17.043
15	0 43 58.01	2.1409	3 0 25.9	17.037
16	0 46 6.53	2.1431	3 17 27.9	17.028
17	0 48 15.18	2.1453	3 34 29.3	17.018
18	0 50 23.96	2.1475	3 51 30.1	17.007
19	0 52 32.88	2.1499	4 8 30.1	16.993
20	0 54 41.95	2.1525	4 25 29.3	16.978
21	0 56 51.18	2.1551	4 42 27.5	16.961
22	0 59 0.56	2.1577	4 59 24.6	16.942
23	1 1 10.10	2.1604	5 16 20.5	16.922
24	1 3 19.81	2.1632	N. 5 33 15.2	16.900

SUNDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 3 19.81	2.1632	N. 5 33 15.2	16.900
1	1 5 29.69	2.1661	5 50 8.5	16.875
2	1 7 39.74	2.1689	6 7 0.2	16.848
3	1 9 49.96	2.1719	6 23 50.3	16.821
4	1 12 0.37	2.1751	6 40 38.7	16.792
5	1 14 10.97	2.1783	6 57 25.3	16.760
6	1 16 21.76	2.1815	7 14 9.9	16.727
7	1 18 32.75	2.1848	7 30 52.5	16.692
8	1 20 43.94	2.1882	7 47 32.9	16.654
9	1 22 55.33	2.1916	8 4 11.0	16.615
10	1 25 6.93	2.1952	8 20 46.7	16.575
11	1 27 18.75	2.1988	8 37 20.0	16.533
12	1 29 30.79	2.2025	8 53 50.7	16.489
13	1 31 43.05	2.2062	9 10 18.7	16.442
14	1 33 55.54	2.2100	9 26 43.8	16.394
15	1 36 8.25	2.2138	9 43 6.0	16.344
16	1 38 21.20	2.2178	9 59 25.1	16.292
17	1 40 34.39	2.2219	10 15 41.1	16.239
18	1 42 47.83	2.2260	10 31 53.8	16.183
19	1 45 1.51	2.2302	10 48 3.1	16.126
20	1 47 15.45	2.2344	11 4 8.9	16.066
21	1 49 29.64	2.2387	11 20 11.1	16.006
22	1 51 44.09	2.2430	11 36 9.6	15.943
23	1 53 58.80	2.2474	N.11 52 4.3	15.878

MONDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 56 13.78	2.2519	N.12 7 55.0	15.812
1	1 58 29.03	2.2564	12 23 41.7	15.743
2	2 0 44.55	2.2610	12 39 24.2	15.672
3	2 3 0.35	2.2657	12 55 2.4	15.600
4	2 5 16.43	2.2704	13 10 36.2	15.526
5	2 7 32.80	2.2751	13 26 5.5	15.450
6	2 9 49.45	2.2799	13 41 30.2	15.372
7	2 12 6.39	2.2848	13 56 50.2	15.292
8	2 14 23.63	2.2897	14 12 5.3	15.210
9	2 16 41.16	2.2947	14 27 15.4	15.127
10	2 18 58.99	2.2997	14 42 20.5	15.042
11	2 21 17.13	2.3048	14 57 20.4	14.954
12	2 23 35.57	2.3099	15 12 15.0	14.865
13	2 25 54.32	2.3151	15 27 4.2	14.774
14	2 28 13.38	2.3203	15 41 47.9	14.681
15	2 30 32.75	2.3255	15 56 25.9	14.586
16	2 32 52.44	2.3307	16 10 58.2	14.490
17	2 35 12.44	2.3360	16 25 24.7	14.392
18	2 37 32.76	2.3413	16 39 45.2	14.291
19	2 39 53.40	2.3467	16 53 59.6	14.188
20	2 42 14.37	2.3522	17 8 7.8	14.085
21	2 44 35.66	2.3576	17 22 9.8	13.979
22	2 46 57.28	2.3631	17 36 5.3	13.871
23	2 49 19.23	2.3685	17 49 54.3	13.762
24	2 51 41.50	2.3739	N.18 3 36.7	13.650

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 21.					**THURSDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 51 41.50	2.3739	N.18 3 36.7	13.650	0	4 51 45.40	2.6102	N.26 18 53.7	6.425
1	2 54 4.10	2.3795	18 17 12.3	13.537	1	4 54 22.11	2.6132	26 25 13.8	6.244
2	2 56 27.04	2.3851	18 30 41.1	13.422	2	4 56 58.99	2.6161	26 31 23.0	6.062
3	2 58 50.31	2.3907	18 44 3.0	13.306	3	4 59 36.04	2.6189	26 37 21.2	5.878
4	3 1 13.92	2.3962	18 57 17.8	13.187	4	5 2 13.26	2.6217	26 43 8.4	5.694
5	3 3 37.86	2.4017	19 10 25.5	13.067	5	5 4 50.65	2.6244	26 48 44.5	5.509
6	3 6 2.13	2.4073	19 23 25.9	12.945	6	5 7 28.19	2.6268	26 54 9.5	5.324
7	3 8 26.74	2.4129	19 36 18.9	12.821	7	5 10 5.87	2.6292	26 59 23.4	5.138
8	3 10 51.68	2.4185	19 49 4.4	12.696	8	5 12 43.69	2.6313	27 4 26.1	4.951
9	3 13 16.96	2.4241	20 1 42.4	12.569	9	5 15 21.63	2.6333	27 9 17.6	4.764
10	3 15 42.57	2.4297	20 14 12.7	12.440	10	5 17 59.69	2.6352	27 13 57.8	4.577
11	3 18 8.52	2.4353	20 26 35.2	12.308	11	5 20 37.86	2.6370	27 18 26.8	4.389
12	3 20 34.80	2.4408	20 38 49.7	12.175	12	5 23 16.13	2.6387	27 22 44.5	4.200
13	3 23 1.42	2.4464	20 50 56.2	12.042	13	5 25 54.50	2.6402	27 26 50.8	4.011
14	3 25 28.37	2.4519	21 2 54.7	11.907	14	5 28 32.95	2.6414	27 30 45.8	3.822
15	3 27 55.65	2.4575	21 14 45.0	11.769	15	5 31 11.47	2.6426	27 34 29.4	3.632
16	3 30 23.27	2.4630	21 26 27.0	11.630	16	5 33 50.06	2.6436	27 38 1.6	3.442
17	3 32 51.21	2.4684	21 38 0.6	11.489	17	5 36 28.70	2.6444	27 41 22.4	3.251
18	3 35 19.48	2.4739	21 49 25.7	11.347	18	5 39 7.39	2.6452	27 44 31.7	3.060
19	3 37 48.08	2.4793	22 0 42.2	11.202	19	5 41 46.12	2.6457	27 47 29.6	2.869
20	3 40 17.00	2.4848	22 11 50.0	11.057	20	5 44 24.88	2.6461	27 50 16.0	2.678
21	3 42 46.25	2.4902	22 22 49.1	10.911	21	5 47 3.65	2.6463	27 52 51.0	2.487
22	3 45 15.82	2.4955	22 33 39.3	10.762	22	5 49 42.43	2.6464	27 55 14.5	2.296
23	3 47 45.71	2.5008	N.22 44 20.5	10.611	23	5 52 21.22	2.6464	N.27 57 26.5	2.105
	WEDNESDAY 22.					**FRIDAY 24.**			
0	3 50 15.91	2.5060	N.22 54 52.6	10.459	0	5 55 0.00	2.6462	N.27 59 27.1	1.914
1	3 52 46.43	2.5112	23 5 15.6	10.307	1	5 57 38.76	2.6458	28 1 16.2	1.722
2	3 55 17.25	2.5163	23 15 29.4	10.152	2	6 0 17.49	2.6452	28 2 53.8	1.531
3	3 57 48.38	2.5214	23 25 33.8	9.995	3	6 2 56.18	2.6444	28 4 19.9	1.340
4	4 0 19.82	2.5264	23 35 28.8	9.838	4	6 5 34.82	2.6436	28 5 34.6	1.149
5	4 2 51.55	2.5313	23 45 14.4	9.680	5	6 8 13.41	2.6426	28 6 37.8	0.958
6	4 5 23.58	2.5362	23 54 50.4	9.519	6	6 10 51.93	2.6414	28 7 29.6	0.768
7	4 7 55.90	2.5411	24 4 16.7	9.357	7	6 13 30.38	2.6401	28 8 9.9	0.578
8	4 10 28.51	2.5459	24 13 33.3	9.195	8	6 16 8.74	2.6385	28 8 38.9	0.388
9	4 13 1.41	2.5507	24 22 40.1	9.031	9	6 18 47.00	2.6368	28 8 56.5	0.198
10	4 15 34.59	2.5553	24 31 37.0	8.865	10	6 21 25.16	2.6351	28 9 2.7	+ 0.009
11	4 18 8.04	2.5597	24 40 23.9	8.697	11	6 24 3.21	2.6331	28 8 57.6	− 0.180
12	4 20 41.75	2.5641	24 49 0.7	8.529	12	6 26 41.13	2.6309	28 8 41.1	0.369
13	4 23 15.73	2.5685	24 57 27.4	8.360	13	6 29 18.92	2.6287	28 8 13.3	0.557
14	4 25 49.97	2.5728	25 5 43.9	8.190	14	6 31 56.57	2.6263	28 7 34.3	0.743
15	4 28 24.47	2.5771	25 13 50.2	8.018	15	6 34 34.07	2.6237	28 6 44.1	0.930
16	4 30 59.22	2.5812	25 21 46.1	7.845	16	6 37 11.41	2.6209	28 5 42.7	1.117
17	4 33 34.21	2.5851	25 29 31.6	7.672	17	6 39 48.58	2.6179	28 4 30.1	1.303
18	4 36 9.43	2.5890	25 37 6.7	7.497	18	6 42 25.56	2.6148	28 3 6.3	1.488
19	4 38 44.89	2.5928	25 44 31.2	7.320	19	6 45 2.36	2.6117	28 1 31.5	1.672
20	4 41 20.57	2.5965	25 51 45.1	7.142	20	6 47 38.97	2.6084	27 59 45.7	1.855
21	4 43 56.47	2.6001	25 58 48.4	6.966	21	6 50 15.37	2.6049	27 57 48.9	2.038
22	4 46 32.58	2.6036	26 5 41.0	6.787	22	6 52 51.56	2.6013	27 55 41.1	2.221
23	4 49 8.89	2.6069	26 12 22.8	6.606	23	6 55 27.53	2.5976	27 53 22.4	2.403
24	4 51 45.40	2.6102	N.26 18 53.7	6.425	24	6 58 3.27	2.5937	N.27 50 52.9	2.585

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	6 58 3.27	2.5937	N.27 50 52.9	2.582
1	7 0 38.78	2.5897	27 48 12.6	2.762
2	7 3 14.04	2.5855	27 45 21.5	2.941
3	7 5 49.04	2.5812	27 42 19.7	3.118
4	7 8 23.78	2.5768	27 39 7.3	3.295
5	7 10 58.26	2.5723	27 35 44.3	3.471
6	7 13 32.46	2.5677	27 32 10.8	3.646
7	7 16 6.38	2.5629	27 28 26.8	3.820
8	7 18 40.01	2.5580	27 24 32.4	3.992
9	7 21 13.34	2.5530	27 20 27.8	4.163
10	7 23 46.37	2.5479	27 16 12.9	4.334
11	7 26 19.09	2.5427	27 11 47.7	4.504
12	7 28 51.50	2.5374	27 7 12.4	4.672
13	7 31 23.58	2.5319	27 2 27.0	4.839
14	7 33 55.33	2.5264	26 57 31.7	5.004
15	7 36 26.75	2.5208	26 52 26.5	5.169
16	7 38 57.83	2.5151	26 47 11.4	5.332
17	7 41 28.56	2.5093	26 41 46.6	5.494
18	7 43 58.95	2.5035	26 36 12.1	5.655
19	7 46 28.98	2.4975	26 30 28.0	5.815
20	7 48 58.65	2.4914	26 24 34.3	5.973
21	7 51 27.95	2.4852	26 18 31.2	6.130
22	7 53 56.88	2.4790	26 12 18.7	6.286
23	7 56 25.43	2.4726	N.26 5 56.9	6.440

SUNDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	7 58 53.61	2.4665	N.25 59 25.9	6.593
1	8 1 21.41	2.4600	25 52 45.7	6.745
2	8 3 48.81	2.4534	25 45 56.5	6.894
3	8 6 15.82	2.4469	25 38 58.4	7.042
4	8 8 42.44	2.4404	25 31 51.4	7.190
5	8 11 8.67	2.4338	25 24 35.6	7.336
6	8 13 34.50	2.4272	25 17 11.1	7.480
7	8 15 59.93	2.4204	25 9 38.0	7.623
8	8 18 24.95	2.4136	25 1 56.3	7.765
9	8 20 49.56	2.4068	24 54 6.2	7.905
10	8 23 13.76	2.3999	24 46 7.7	8.044
11	8 25 37.55	2.3930	24 38 0.9	8.181
12	8 28 0.92	2.3861	24 29 46.0	8.316
13	8 30 23.88	2.3792	24 21 23.0	8.451
14	8 32 46.42	2.3722	24 12 51.9	8.583
15	8 35 8.54	2.3652	24 4 13.0	8.713
16	8 37 30.24	2.3582	23 55 26.3	8.843
17	8 39 51.52	2.3511	23 46 31.8	8.972
18	8 42 12.37	2.3440	23 37 29.7	9.098
19	8 44 32.80	2.3370	23 28 20.0	9.223
20	8 46 52.81	2.3299	23 19 2.9	9.347
21	8 49 12.39	2.3228	23 9 38.4	9.469
22	8 51 31.55	2.3157	23 0 6.6	9.590
23	8 53 50.28	2.3086	22 50 27.6	9.708
24	8 56 8.58	2.3015	N.22 40 41.6	9.825

MONDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 56 8.58	2.3015	N.22 40 41.6	9.825
1	8 58 26.46	2.2945	22 30 48.6	9.941
2	9 0 43.92	2.2874	22 20 48.7	10.056
3	9 3 0.95	2.2803	22 10 41.9	10.169
4	9 5 17.56	2.2732	22 0 28.4	10.280
5	9 7 33.74	2.2662	21 50 8.3	10.390
6	9 9 49.50	2.2592	21 39 41.6	10.498
7	9 12 4.84	2.2522	21 29 8.5	10.605
8	9 14 19.76	2.2452	21 18 29.0	10.710
9	9 16 34.26	2.2382	21 7 43.3	10.814
10	9 18 48.34	2.2312	20 56 51.4	10.917
11	9 21 2.00	2.2243	20 45 53.3	11.017
12	9 23 15.25	2.2174	20 34 49.3	11.116
13	9 25 28.09	2.2106	20 23 39.4	11.213
14	9 27 40.52	2.2037	20 12 23.7	11.310
15	9 29 52.53	2.1969	20 1 2.2	11.405
16	9 32 4.14	2.1901	19 49 35.1	11.498
17	9 34 15.34	2.1833	19 38 2.4	11.590
18	9 36 26.14	2.1767	19 26 24.3	11.679
19	9 38 36.54	2.1700	19 14 40.9	11.768
20	9 40 46.54	2.1634	19 2 52.1	11.857
21	9 42 56.15	2.1568	18 50 58.1	11.943
22	9 45 5.36	2.1502	18 38 59.0	12.027
23	9 47 14.18	2.1437	N.18 26 54.9	12.110

TUESDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 49 22.61	2.1373	N.18 14 45.8	12.192
1	9 51 30.66	2.1309	18 2 31.9	12.272
2	9 53 38.32	2.1245	17 50 13.2	12.351
3	9 55 45.60	2.1183	17 37 49.8	12.428
4	9 57 52.51	2.1121	17 25 21.8	12.504
5	9 59 59.05	2.1059	17 12 49.3	12.579
6	10 2 5.21	2.0997	17 0 12.4	12.652
7	10 4 11.01	2.0936	16 47 31.1	12.723
8	10 6 16.45	2.0876	16 34 45.6	12.793
9	10 8 21.52	2.0816	16 21 55.9	12.862
10	10 10 26.24	2.0757	16 9 2.1	12.930
11	10 12 30.60	2.0698	15 56 4.3	12.997
12	10 14 34.61	2.0640	15 43 2.5	13.062
13	10 16 38.28	2.0582	15 29 56.9	13.125
14	10 18 41.60	2.0525	15 16 47.5	13.187
15	10 20 44.58	2.0469	15 3 34.4	13.248
16	10 22 47.23	2.0414	14 50 17.7	13.308
17	10 24 49.55	2.0359	14 36 57.4	13.367
18	10 26 51.54	2.0304	14 23 33.7	13.423
19	10 28 53.20	2.0251	14 10 6.6	13.479
20	10 30 54.55	2.0198	13 56 36.2	13.533
21	10 32 55.58	2.0146	13 43 2.6	13.587
22	10 34 56.30	2.0094	13 29 25.8	13.638
23	10 36 56.71	2.0043	13 15 46.0	13.688
24	10 38 56.82	1.9993	N.13 2 3.2	13.737

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
τ^{3} Arietis	5.3	−0.08	+6.6	+20 21.6	25 17 17.7	+10 24.8	−0.4952	0.5632	+0.2034	+17	−60
65 Arietis	6.0	−0.07	6.7	20 25.5	17 59.9	+11 5.5	−0.4194	0.5635	0.2019	+21	−56
B. A. C. 1143	6.0	+0.07	7.1	20 35.5	26 2 18.9	− 4 54.1	+1.0210	0.5705	0.1846	+90	+25
B. A. C. 1189	6.0	0.09	7.6	21 55.3	4 31.3	− 2 46.7	+0.0824	0.5723	0.1797	+48	−26
32 Tauri	6.0	0.13	7.7	22 10.3	7 20.3	− 0 4.1	+0.3263	0.5745	0.1732	+63	−13
33 Tauri	6.3	+0.14	+8.0	+22 52.0	7 24.7	+ 0 0.1	−0.3616	0.5745	+0.1731	+24	−49
B. A. C. 1238	6.3	0.16	8.0	22 54.1	8 58.7	+ 1 30.4	−0.1295	0.5759	0.1693	+36	−36
36 Tauri	6.0	0.18	8.3	23 48.7	10 10.2	+ 2 48.7	−0.8206	0.5769	0.1662	− 3	−66
B. A. C. 1347	7.3	0.29	8.5	24 9.5	17 56.4	+10 7.2	+0.0218	0.5825	0.1469	+45	−26
62 Tauri	6.0	0.29	8.5	24 3.2	18 8.4	+10 18.7	+0.1563	0.5826	0.1463	+53	−19
k Tauri	6.0	+0.51	+8.8	+24 53.3	27 8 22.5	+ 0 1.1	+1.0110	0.5917	+0.1095	+90	+32
136 Tauri	5.3	0.83	8.7	27 35.3	28 4 6.6	− 5 6.6	−0.0975	0.6006	+0.0449	+38	−23
49 Aurigæ	5.7	1.04	7.8	28 6.4	19 39.5	+ 9 47.0	−0.3216	0.6015	−0.0062	+25	−32
54 Aurigæ	6.0	1.07	7.5	28 21.5	21 16.4	+11 19.8	−0.5895	0.6016	0.0113	+10	−50
25 Geminorum	6.5	1.07	7.5	28 17.8	21 56.5	+11 53.2	−0.5374	0.6016	0.0138	+13	−46
W. vi, 1656	8.2	+1.15	+6.7	+26 59.7	29 6 21.5	− 3 58.0	+0.5467	0.5994	−0.0413	+82	+11
47 Geminorum	6.0	1.18	6.3	27 2.0	9 11.9	− 1 14.7	+0.3782	0.5987	0.0505	+68	+ 1
53 Geminorum	6.3	1.21	6.3	28 5.1	10 53.9	+ 0 23.1	−0.7785	0.5978	0.0559	− 2	−62
59 Geminorum	6.9	1.24	6.0	27 50.8	14 9.3	+ 3 30.4	−0.7352	0.5967	0.0662	+ 1	−62
ι Geminorum	4.0	1.24	5.9	28 0.7	14 36.1	+ 3 56.1	−0.9330	0.5964	0.0676	−12	−62
b^{2} Geminorum	6.3	+1.25	+5.7	+28 8.3	16 8.8	+ 5 24.9	−1.1700	0.5955	−0.0724	−34	−62
B. A. C. 2472	8.0	1.25	5.7	28 8.0	16 28.1	+ 5 43.5	−1.1890	0.5955	0.0734	−36	−62
υ Geminorum	4.3	1.26	5.4	27 8.1	18 29.6	+ 7 40.0	−0.3300	0.5944	0.0797	+25	−39
c Geminorum	6.0	1.27	4.7	26 2.4	21 39.1	+10 41.7	+0.5147	0.5927	0.0893	+79	+ 5
φ Geminorum	5.0	1.31	4.3	27 2.6	30 1 15.3	− 9 50.8	−0.8461	0.5905	0.0999	− 6	−63
ω^{1} Cancri	6.0	+1.30	+3.9	+25 41.2	4 10.0	− 7 3.2	+0.2308	0.5886	−0.1082	+58	−12
ω^{2} Cancri	6.3	1.30	3.8	25 23.1	4 29.1	− 6 45.0	+0.5006	0.5879	0.1092	+77	+ 2
ψ^{1} Cancri	6.8	1.33	3.5	26 9.6	7 47.8	− 3 34.0	−0.6625	0.5858	0.1188	+ 6	−62
ψ^{2} Cancri	5.7	1.33	3.5	25 50.0	7 53.9	− 6 28.2	−0.3414	0.5858	0.1188	+25	−43
λ Cancri	5.7	1.33	2.9	24 21.5	11 54.6	+ 0 23.0	+0.6618	0.5828	0.1298	+90	+ 8
ν^{1} Cancri *mult.*	6.0	+1.34	+2.7	+24 53.1	14 20.9	+ 2 43.6	−0.1992	0.5809	−0.1362	+33	−37
ν^{2} Cancri	5.8	1.34	2.6	24 30.0	15 8.2	+ 3 29.0	+0.0869	0.5802	0.1383	+49	−22
ν^{3} Cancri	6.0	1.34	2.4	24 26.5	16 18.3	+ 4 36.4	−0.0187	0.5792	0.1412	+42	−28
ν^{4} Cancri	5.7	1.35	2.4	24 26.9	16 54.3	+ 5 11.0	−0.1090	0.5788	0.1428	+37	−33
ξ Cancri	5.0	1.35	0.4	22 28.7	31 7 56.8	− 4 20.5	−0.5124	0.5652	0.1778	+16	−58
79 Cancri	6.3	+1.35	+0.4	+22 25.8	8 22.0	− 3 56.3	−0.5383	0.5649	−0.1787	+14	−60
B. A. C. 3138	6.3	1.34	+0.2	21 43.4	9 46.0	− 2 35.3	−0.0635	0.5636	0.1819	+40	−34
B. A. C. 3206	6.3	+1.32	−0.3	+20 15.0	14 34.0	+ 2 2.3	+0.5588	0.5594	−0.1915	+81	− 4
FEBRUARY.											
η Leonis	3.3	+1.24	−2.5	+17 17.1	1 9 36.1	− 3 35.3	−0.3277	0.5414	−0.2228	+26	−54
42 Leonis	6.0	1.20	3.1	15 30.9	16 22.8	+ 2 57.9	−0.0261	0.5352	0.2319	+42	−39
B. A. C. 3579	7.2	1.17	3.3	14 53.5	19 41.2	+ 6 9.8	−0.1430	0.5325	0.2367	+36	−46
ι Leonis	5.7	1.16	3.5	14 41.3	21 18.3	+ 7 43.8	−0.3139	0.5310	0.2374	+27	−55
B. A. C. 3837	6.3	0 99	4.5	8 38.9	2 17 57.3	+ 3 44.2	+0.9504	0.5153	0.2545	+90	+ 9
B. A. C. 4039	7.5	+0.80	−5.4	+ 4 4.6	3 16 56.9	+ 2 3.4	−0.1498	0.5025	−0.2626	+36	−51
b Virginis	5.8	0.80	5.5	4 15.0	17 51.8	+ 2 56.6	−0.5766	0.5021	0.2628	+14	−78
10 Virginis	6.4	0.74	5.6	+ 2 29.8	23 3.9	+ 7 59.9	−0.0662	0.4999	0.2630	+40	−47
η Virginis	4.0	0.68	5.4	− 0 4.5	4 4 34.3	−10 39.0	+1.2510	0.4979	0.2631	+90	+29
γ Virginis (mean.)	3.1	0.58	5.8	0 51.9	16 25.6	+ 0 52.4	−1.0050	0.4949	0.2611	−13	−90
38 Virginis	6.2	+0.51	−5.7	− 2 58.4	22 42.4	+ 6 58.8	−0.3565	0.4940	−0.2593	+25	−64
SATURN				2 36.9	5 0 8.6	+ 8 22.6	−1.1170	0.4848	0.2594	−18	−90
k Virginis	5.9	0.48	5.8	3 14.2	2 14.5	+10 25.0	−0.9835	0.4935	0.2580	− 9	−90
θ Virginis	4.7	0.43	5.7	4 58.2	7 52.8	− 8 6.0	−0.5467	0.4933	0.2554	+15	−77
B. A. C. 4591	6.0	0.22	5.5	9 10.4	6 4 16.1	−11 43.4	−1.0420	0.4947	0.2425	−15	−90
λ Virginis	5.0	+0.05	−5.2	−12 52.8	21 28.2	+ 4 26.6	−1.0140	0.4987	−0.2271	−16	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
B. A. C. 4896	6.6	-0.16	- 4.6	-17 20.8	7 14 34.2	- 2 56.8	+0.1933	0.5052	-0.2073	+46	-33
10 Libræ	6.5	0.16	4.3	17 55.0	14 42.2	- 2 49.0	+0.7918	0.5052	0.2071	+72	- 1
ι^1 Libræ	‘5.0	0.26	4.4	19 23.3	8 1 11.4	+ 7 21.6	+0.3225	0.5100	0.1932	+51	-27
ι^2 Libræ	6.5	0.27	4.5	19 14.7	1 45.3	+ 7 54.5	+0.0553	0.5105	0.1922	+37	-41
δ Scorpii	2.3	0.51	4.8	22 19.1	9 1 6.0	+ 6 32.2	-0.6061	0.5235	0.1544	- 1	-86
19 Scorpii	5.1	-0.62	- 4.8	-23 54.8	10 48.9	- 8 3.5	-0.2540	0.5295	-0.1360	+15	-59
σ Scorpii	3.4	0.62	4.7	25 20.2	11 2.8	- 7 50.0	+1.2850	0.5297	0.1355	+65	+47
25 Scorpii	7.0	0.74	5.1	25 20.1	23 4.4	+ 3 47.9	-0.2012	0.5364	0.1108	+15	-56
31 Ophiuchi	6.7	0.81	5.5	25 29.6	10 7 16.0	+11 43.1	-0.8582	0.5413	0.0926	-22	-90
B. A. C. 5800	7.5	0.86	5.3	26 51.5	11 32.7	- 8 9.0	+0.2657	0.5439	0.0828	+36	-29
A Ophiuchi	4.9	-0.87	- 5.5	-26 26.8	12 5.1	- 7 37.7	-0.2308	0.5439	-0.0815	+10	-58
B. A. C. 5813	6.8	0.87	5.6	26 23.6	12 28.8	- 7 14.8	-0.3206	0.5445	0.0806	+ 5	-64
38 Ophiuchi	6.7	0.87	5.4	26 30.8	13 5.6	- 6 39.3	-0.2381	0.5445	0.0791	+ 9	-58
43 Ophiuchi	5.8	0.89	5.7	28 2.4	15 37.1	- 4 12.9	+1.2470	0.5463	0.0732	+62	+46
3 Sagittarii *var.*	4.6	0.99	6.1	27 47.5	11 2 22.1	+ 6 9.6	+0.3264	0.5511	0.0469	+36	-25
B. A. C. 6127	5.1	-1.05	- 6.4	-28 28.2	11 19.9	- 9 11.6	+0.7469	0.5543	-0.0240	+62	0
B. A. C. 6194	5.1	1.07	7.1	27 4.9	15 41.5	- 4 59.4	-0.8478	0.5562	-0.0127	-31	-90
φ Sagittarii	3.7	1.14	7.8	27 6.1	12 3 35.0	+ 6 28.5	-0.7859	0.5594	+0.0188	-26	-90
τ Sagittarii	3.6	1.20	8.1	27 49.7	12 41.3	- 8 45.0	+0.2844	0.5606	0.0432	+34	-28
B. A. C. 6628	5.9	1.23	8.5	28 4.4	20 11.3	- 1 31.3	+0.9434	0.5608	0.0631	+62	+13
B. A. C. 6666	5.8	-1.24	- 8.7	-27 12.3	22 30.1	+ 0 42.5	+0.1631	0.5610	+0.0694	+29	-34
ω Sagittarii	5.1	1.27	9.5	26 35.2	13 9 37.8	+11 25.9	+0.4314	0.5599	0.0984	+46	-20
A Sagittarii	5.3	1.27	9.6	26 29.3	10 58.9	-11 15.9	+0.4631	0.5599	0.1019	+49	-18
B. A. C. 7077	6.4	1.30	10.3	25 18.5	14 1 40.4	+ 2 53.9	+0.9691	0.5564	0.1385	+65	+15
B. A. C. 7237	6.9	1.30	10.7	24 11.2	10 30.2	+11 25.0	+1.0900	0.5539	0.1589	+66	+24
χ Capricorni	5.4	-1.30	-11.1	-21 37.6	17 24.8	- 5 55.0	-0.4581	0.5516	+0.1742	+ 8	-73
27 Capricorni	6.5	1.30	11.1	20 59.4	17 51.4	- 5 29.3	-1.0520	0.5516	0.1752	-27	-90
				NEW	*MOON.*						
4 Ceti	6.0	1.12	7.9	3 8.8	18 5 18.8	+ 3 12.9	+0.5507	0.5274	0.2786	+77	-16
5 Ceti	6.0	-1.12	- 7.8	- 3 2.7	5 32.4	+ 3 26.1	+0.5099	0.5274	+0.2787	+74	-18
B. A. C. 5	5.7	1.11	7.8	2 49.2	5 47.2	+ 3 40.5	+0.2484	0.5274	0.2787	+63	-26
10 Ceti	6.2	1.07	6.8	- 0 38.6	14 25.6	-11 58.0	+0.5463	0.5278	0.2801	+77	-16
B. A. C. 237	6.7	1.03	5.3	+ 2 48.2	19 2 16.9	- 0 29.1	+0.3588	0.5293	0.2791	+64	-25
73 Piscium	5.9	1.00	4.2	5 4.9	8 44.8	+ 5 46.4	-0.1555	0.5308	0.2770	+36	-52
77 Piscium	5.9	-0.99	- 4.4	+ 4 20.2	9 12.0	+ 6 12.7	+0.7252	0.5308	+0.2767	+90	- 6
ε Piscium	5.5	0.99	4.1	5 4.9	10 25.5	+ 7 23.8	+0.3077	0.5313	0.2763	+61	-27
88 Piscium	6.2	0.98	3.6	6 25.6	13 25.4	+10 18.0	-0.2299	0.5321	0.2750	+32	-55
B. A. C. 410	6.0	0.94	3.1	6 51.1	17 17.2	- 9 57.9	+0.3969	0.5331	0.2728	+67	-22
Jupiter				7 55.9	21 40.0	- 5 43.7	+0.4929	0.5273	0.2666	+73	-17
54 Ceti	5.5	-0.87	- 0.9	+10 30.8	20 6 17.0	+ 2 36.4	+0.1721	0.5381	+0.2627	+53	-32
B. A. C. 609	6.0	0.84	- 0.1	11 46.5	10 16.4	+ 6 28.0	-0.0624	0.5401	0.2587	+39	-45
Mars				14 25.3	20 44.3	- 7 26.0	-0.0961	0.5198	0.2365	+39	-44
29 Arietis	6.3	0.71	+ 1.9	14 33.6	21 1 16.0	- 2 3.4	+0.8632	0.5480	0.2401	+90	+ 8
36 Arietis	6.5	0.68	3.4	17 18.7	6 15.8	+ 1 45.9	-0.7384	0.5511	0.2325	+ 4	-72
40 Arietis	6.3	-0.66	+ 3.7	+17 50.4	8 6.1	+ 3 32.3	-0.8498	0.5524	+0.2296	- 2	-72
π Arietis	5.7	0.65	3.4	17 1.2	8 26.7	+ 3 52.2	+0.0607	0.5531	0.2292	+47	-33
ρ^1 Arietis	7.0	0.61	3.7	17 18.1	10 53.2	+ 6 13.4	+0.3305	0.5544	0.2249	+63	-19
ρ^2 Arietis	6.0	0.62	3.9	17 54.0	11 16.0	+ 6 35.4	-0.1888	0.5544	0.2244	+34	-46
ρ^3 Arietis	6.0	0.61	3.9	17 35.9	11 31.6	+ 6 50.5	+0.1737	0.5552	0.2240	+54	-27
50 Arietis	6.8	-0.58	+ 4.1	+17 34.9	13 18.5	+ 8 33.6	+0.5868	0.5556	+0.2196	+82	- 5
54 Arietis	6.3	0.54	4.6	18 23.2	16 39.4	+11 47.2	+0.5025	0.5585	0.2148	+76	- 9
δ Arietis	4.0	0.54	4.9	19 19.4	18 2.3	-10 52.9	-0.1518	0.5591	0.2119	+36	-42
τ^1 Arietis	5.0	0.51	5.7	20 45.8	22 5.7	- 6 58.3	-0.7640	0.5615	0.2043	+ 2	-66
τ^2 Arietis	5.3	0.49	5.6	20 21.5	22 11.1	- 6 20.6	-0.2210	0.5622	0.2029	+32	-45
65 Arietis	6.0	-0.48	+ 5.7	+20 25.5	22 11.2	- 5 39.9	-0.1474	0.5630	+0.2016	+36	-41

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
49 Aurigæ	5.7	+0.92	+6.6	+28 6.4	1 10 29.8	− 1 10.7	−0.4042	0.6101	−0.0038	+20	−37
54 Aurigæ	6.0	0.92	6.3	28 21.5	12 4.2	+ 0 19.7	−0.6656	0.6098	0.0092	+ 5	−56
25 Geminorum	6.5	0.93	6.3	28 17.8	12 43.3	+ 0 57.1	−0.6108	0.6094	0.0115	+ 8	−52
W. vi, 1656	8.2	0.95	5.5	26 59.7	20 56.5	+ 8 49.0	+0.4807	0.6070	0.0392	+76	+ 7
47 Geminorum	6.0	0.95	5.2	27 2.0	23 43.2	+11 28.6	+0.3207	0.6054	0.0484	+64	− 2
53 Geminorum	6.3	+0.97	+5.1	+28 5.1	2 1 23.1	−10 55.8	−0.8175	0.6047	−0.0548	− 4	−62
59 Geminorum	6.9	0.97	4.8	27 50.8	4 34.5	− 7 52.4	−0.7683	0.6030	0.0645	− 1	−62
ι Geminorum	4.0	0.98	4.8	28 0.7	5 0.8	− 7 27.3	−0.9625	0.6029	0.0656	−15	−62
b^2 Geminorum	6.3	0.99	4.6	28 8.3	6 31.7	− 6 0.2	−1.1940	0.6017	0.0704	−37	−62
B. A. C. 2472	8.0	0.99	4.6	28 8.0	6 50.6	− 5 32.1	−1.2020	0.6015	0.0716	−39	−62
υ Geminorum	4.3	+0.97	+4.4	+27 8.1	8 49.8	− 3 48.8	−0.3572	0.6002	−0.0778	+23	−40
ε Geminorum	6.0	0.96	4.0	26 2.4	11 55.9	− 0 49.5	+0.4903	0.5981	0.0873	+77	+ 4
φ Geminorum	5.0	0.96	3.7	27 3.6	15 28.5	+ 2 34.4	−0.8492	0.5954	0.0981	− 6	−63
ω^1 Cancri	6.0	0.96	3.5	25 41.2	18 20.6	+ 5 19.3	+0.2274	0.5933	0.1064	+57	−12
ω^2 Cancri	6.3	0.95	3.6	25 23.1	18 39.3	+ 5 37.2	+0.4968	0.5933	0.1073	+77	+ 2
ψ^1 Cancri	6.8	+0.95	+3.2	+26 9.6	21 55.1	+ 8 45.2	−0.6510	0.5898	−0.1166	+ 7	−61
ψ^2 Cancri	5.7	0.95	3.2	25 50.0	22 1.1	+ 8 50.9	−0.3323	0.5898	0.1169	+25	−42
λ Cancri	5.7	0.93	2.9	24 21.5	3 1 58.8	−11 20.9	+0.6779	0.5864	0.1278	+90	+10
ν^1 Cancri *mult.*	6.0	0.93	2.6	24 53.1	4 23.3	− 9 2.1	−0.1727	0.5835	0.1348	+34	−35
ν^2 Cancri	5.8	0.93	2.6	24 30.0	5 10.0	− 8 17.3	+0.1134	0.5834	0.1362	+50	−20
ν^3 Cancri	6.0	+0.93	+2.5	+24 26.5	6 19.4	− 7 10.6	+0.0136	0.5822	−0.1395	+44	−26
ν^4 Cancri	5.7	0.92	2.5	24 26.9	6 55.1	− 6 36.3	−0.0780	0.5816	0.1407	+39	−31
ξ Cancri	5.0	0.83	1.2	22 28.7	21 50.8	+ 7 45.4	−0.4358	0.5659	0.1775	+20	−54
79 Cancri	6.3	0.83	1.2	22 25.8	22 15.8	+ 8 9.4	−0.4599	0.5659	0.1760	+18	−55
B. A. C. 3138	6.3	0.81	1.1	21 43.4	23 39.5	+ 9 30.1	+0.0137	0.5640	0.1793	+44	−31
B. A. C. 3206	6.3	+0.76	+0.9	+20 15.0	4 4 26.6	− 9 53.3	+0.6521	0.5593	−0.1888	+90	+ 2
η Leonis	3.3	0.61	−0.2	17 17.1	23 29.9	+ 8 30.4	−0.1806	0.5393	0.2197	+34	−46
42 Leonis	6.0	0.54	0.4	15 30.9	5 6 18.7	− 8 54.3	+0.1413	0.5328	0.2281	+52	−32
B. A. C. 3579	7.2	0.51	0.5	14 53.4	9 38.7	− 5 40.8	+0.0297	0.5294	0 2319	+45	−36
ι Leonis	5.7	+0.49	0.6	14 41.2	11 16.4	− 4 6.2	−0.1364	0.5279	0.2335	+36	−45
B. A. C. 4039	7.5	0.00	−0.6	+ 4 4.7	7 7 28.4	− 9 13.1	+0.1275	0.4975	−0.2586	+51	−36
b Virginis	5.8	0.00	0.7	4 15.1	8 24.2	− 8 19.0	−0.3000	0.4972	0.2587	+28	−60
10 Virginis	6.4	−0.07	0.5	+ 2 29.9	13 41.4	− 3 10.6	+0.2252	0.4949	0.2590	+56	−32
γ Virginis (*mean.*)	3.1	0.26	0.5	− 0 51.8	8 7 20.2	−10 0.9	−0.6937	0.4903	0.2575	+ 8	−90
38 Virginis	6.2	0.35	0.2	2 58.3	13 43.1	− 3 48.5	−0.0346	0.4899	0.2563	+41	−45
SATURN				− 2 45.9	15 14.9	− 2 19.1	−0.6513	0.4889	−0.2555	+10	−86
k Virginis	5.9	−0.38	−0.4	3 14.1	17 18.6	− 0 18.8	−0.6645	0.4896	0.2550	+ 9	−87
46 Virginis	6.1	0.38	0.5	2 47.6	17 50.1	+ 0 11.8	−1.2810	0.4896	0.2549	−32	−90
θ Virginis	4.7	0.45	0.2	4 58.1	23 2.3	+ 5 15.6	−0.2195	0.4889	0.2528	+32	−56
77 Virginis	7.0	0.60	0.2	7 4.4	9 12 5.1	− 6 2.9	−1.1620	0.4900	0.2456	−11	−90
m Virginis	5.7	−0.64	−0.1	− 8 9.8	16 37.4	− 1 38.0	−1.0710	0.4908	−0.2424	−17	−90
B. A. C. 4591	6.0	0.69	0.0	9 10.3	19 42.5	+ 1 22.0	−0.7074	0.4914	0.2405	+ 5	−90
λ Virginis	5.0	0.88	0.0	12 52.7	10 13 5.7	− 5 43.7	−0.6784	0.4966	0.2262	+ 4	−90
URANUS				14 28.3	23 4.0	+ 3 57.7	−1.1220	0.4994	0.2158	−25	−90
α^1 Libræ	6.3	1.07	−0.5	15 33.1	11 5 53.1	+10 35.0	−1.3720	0.5040	0.2081	−58	−68
α^2 Libræ	3.0	−1.07	−0.5	−15 35.8	5 59.2	+10 40.9	−1.3440	0.5041	−0.2079	−51	−77
B. A. C. 4896	6.6	1.09	+0.1	17 20.7	6 19.3	+11 0.4	+0.5225	0.5042	0.2077	+65	−16
10 Libræ	6.5	1.10	0.2	17 54.9	6 27.3	+11 8.2	+1.1280	0.5042	0.2073	+72	+22
ι^1 Libræ	5.0	1.22	+0.1	19 23.2	16 59.3	− 2 38.3	+0.6445	0.5102	0.1936	+69	− 9
ι^2 Libræ	6.5	1.22	−0.3	19 14.6	17 33.3	− 2 5.3	+0.3767	0.5107	0.1930	+54	−23
δ Scorpii	2.3	−1.45	−1.6	−22 19.0	12 16 55.6	− 3 26.0	−0.3133	0.5250	−0.1553	+14	−62
19 Scorpii	5.1	1.54	2.2	23 54.7	13 2 37.5	+ 5 57.3	+0.0239	0.5316	0.1375	+29	−42
25 Scorpii	7.0	1.64	3.2	25 20.0	14 50.9	− 6 16.4	+0.0588	0.5394	0.1127	+27	−43
18 Ophiuchi	6.7	1.65	3.4	24 27.2	16 11.7	− 4 55.2	−1.0610	0.5399	0.1097	−35	−90
B. A. C. 5703	6.3	1.68	3.8	24 55.8	20 51.5	− 0 24.9	−1.0230	0.5431	0.1000	−33	−90
26 Ophiuchi	6.1	−1.68	−3.8	−24 49.6	20 56.8	− 0 19.8	−1.1470	0.5431	−0.0994	−43	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R. A.					LIMITING PARALLELS.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
31 Ophiuchi	6.7	-1.70	- 3.9	-25 29.6	13 23 0.6	+ 1 39.9	-0.6120	0.5444	-0.0949	- 9	-88
B. A. C. 5800	7.5	1.74	4.1	26 51.5	14 3 16.2	+ 5 46.7	+0.5053	0.5466	0.0849	+50	-11
A Ophiuchi	4.9	1.74	4.3	26 26.8	3 48.5	+ 6 17.8	+0.0073	0 5470	0.0835	+22	-43
B. A. C. 5813	6.8	1.74	4.3	26 23.6	4 12.1	+ 6 40.7	-0.0824	0.5474	0.0827	+18	-49
38 Ophiuchi	6.7	1.74	4.3	26 30.8	4 48.7	+ 7 16.0	-0.0018	0.5476	0.0811	+22	-44
3 Sagittarii *var.*	4.6	-1.82	- 5.7	-27 47.5	18 1.7	- 3 58.6	+0.5378	0.5540	-0.0492	+49	-13
B. A. C. 6127	5 1	1.86	6.4	28 28.2	15 2 57.2	+ 4 37.9	+0.9397	0.5577	0.0262	+62	+13
B. A. C. 6194	5.1	1.87	7.0	27 4.9	7 17.7	+ 8 49.0	-0.6609	0.5590	-0.0147	-19	-90
φ Sagittarii	3.7	1.84	8.4	27 6.1	19 9.0	- 3 45.4	-0.6255	0.5616	+0.0168	-17	-90
				NEW	*MOON.*						
33 Capricorni	5.7	-1.55	-12.9	-21 18.6	18 16 13.4	- 9 8.7	+0.4706	0.5466	+0.1850	+57	-18
35 Capricorni	6.2	1.54	13.0	21 39.7	17 37.3	- 7 47.7	+1.1030	0.5459	0.1877	+68	+22
37 Capricorni	6.0	1.51	12.8	20 33.9	21 6.3	- 4 25.7	+0.6084	0.5439	0.1943	+66	-11
38 Capricorni	6.9	1.51	12.9	20 43.8	21 7.8	- 4 24.3	+0.7861	0.5439	0.1943	+69	- 0
ε Capricorni	4.7	-1.50	-12.8	-19 56.9	22 7.7	- 3 26.4	+0.1582	0.5437	+0.1962	+41	-35
κ Capricorni	5.0	1.48	12 8	19 21.4	19 0 41.3	- 0 58.0	+0.0422	0.5423	0.2007	+36	-41
B. A. C. 7550	6.3	1.48	12.8	20 6.7	0 56.7	- 0 43.1	+0.8888	0.5423	0.2013	+70	+ 6
50 Aquarii	6.1	1.34	12.0	14 4.5	20 16.5	- 6 1.6	-1.2510	0.5333	0.2316	-36	-90
56 Aquarii	6.3	1.32	12.2	15 8.2	23 2.6	- 3 19.0	+0.5054	0.5323	0.2352	+66	-17
74 Aquarii	6.0	-1.22	-11.2	-12 11.3	20 10 11.8	+ 7 26.9	+0.1285	0.5279	+0.2485	+47	-37
75 Aquarii	7.0	1.21	11.3	12 45.7	10 30.0	+ 7 44.4	+0.7989	0.5277	0.2484	+67	- 1
ψ^1 Aquarii	4.1	1.14	10.3	9 40.4	21 5.3	- 6 0.3	+0.2769	0.5247	0.2589	+56	-29
χ Aquarii	5.3	1.14	9.9	8 18.8	21 35.1	- 5 31.5	-1.0070	0.5246	0.2592	-13	-90
ψ^2 Aquarii	4.2	1.13	10.3	9 46.2	22 5.6	- 5 1.9	+0.6383	0.5243	0.2596	+79	-11
24 Piscium	6.1	-1.01	- 7.9	- 3 45.1	21 15 20.0	+11 40.3	-1.0120	0.5214	+0.2705	-11	-90
27 Piscium	5.1	0.98	7.8	4 9.1	18 10.6	- 9 34.5	+0.1720	0.5213	0.2717	+52	-35
29 Piscium	5.0	0.97	7.6	3 37.5	19 43.8	- 8 4.1	+0.0516	0.5212	0.2723	+41	-46
B. A. C. 8351	8.0	0.97	7.5	3 21.8	19 50.3	- 7 57.9	-0.1891	0.5212	0.2723	+33	-54
4 Ceti	6.0	0.95	7.3	3 8.8	22 39.0	- 5 14.4	+0.3538	0.5211	0.2730	+63	-26
5 Ceti	6.0	-0.95	- 7.3	- 3 2.7	22 52.9	- 5 0.9	+0.3125	0.5211	+0.2732	+61	-28
B. A. C. 5	5.7	0.95	7.2	2 49.2	23 8.1	- 4 46.2	+0.1494	0.5211	0.2732	+52	-36
10 Ceti	6.2	0.87	6.1	- 0 38.6	22 7 58.1	+ 3 47.4	+0.3324	0.5213	0.2749	+62	-26
B. A. C. 237	6.7	0.80	4.0	+ 2 48.3	20 4.6	- 8 28.8	+0.1195	0.5232	0.2743	+50	-37
73 Piscium	5.9	0.74	2.8	5 5.0	23 2 40.3	- 2 5.5	-0.4093	0.5250	0.2727	+23	-66
77 Piscium	5.9	-0.73	- 3.1	+ 4 20.3	3 8.0	- 1 38.8	+0.4790	0.5252	+0.2724	+72	-19
e Piscium	5.5	0.73	2.7	5 5.0	4 22.8	- 0 26.4	+0.0579	0 5258	0.2719	+47	-40
88 Piscium	6.2	0.71	2.1	6 25.7	7 25.0	+ 2 29.9	-0.4938	0.5266	0.2707	+18	-72
JUPITER				6 5.8	7 34.8	+ 2 39.6	-0.1108	0 5214	0.2683	+38	-48
B. A. C. 410	6.0	0.67	1.7	6 51.1	11 22.0	+ 6 19.5	+0.1412	0.5281	0.2687	+51	-35
96 Piscium	6.6	-0.63	- 1.5	+ 6 44.5	14 17.6	+ 9 9.5	+1.0370	0.5295	+0.2673	+90	+14
σ Piscium	4.3	0.56	- 0.2	8 37.1	22 0.6	- 7 22.5	+1.1660	0.5332	0.2619	+90	+24
54 Ceti	5.5	0.55	+ 0.6	10 30.8	24 0 34.0	- 4 54.2	-0.0967	0.5346	0.2599	+38	-46
B. A. C. 609	6.0	0.51	1.4	11 46.5	4 32.3	- 1 3.7	-0.3559	0.5365	0.2563	+25	-60
29 Arietis	6.3	0.34	3.2	14 33.6	19 44.9	-10 21.9	+0.5880	0.5464	0.2388	+82	- 9
36 Arietis	6.5	-0.29	+ 4.7	+17 18.8	25 0 46.6	- 5 30.7	-1.0200	0.5500	+0.2316	-14	-73
40 Arietis	6.3	0.26	5.0	17 50.4	2 37.4	- 3 43.8	-1.1270	0.5516	0.2288	-22	-72
π Arietis	5.7	0.26	4.7	17 1.2	2 58.0	- 3 23.9	-0.2177	0.5517	0.2286	+32	-48
ρ^1 Arietis	7.0	0.23	5.0	17 18.1	5 25.3	- 1 1.8	+0.0523	0.5538	0.2244	+46	-33
ρ^2 Arietis	6.0	0.24	5.2	17 54.0	5 48.0	- 0 39.9	-0.4673	0.5541	0.2239	+19	-61
ρ^3 Arietis	6.0	-0.22	+ 5.2	+17 35.9	6 3.7	- 0 24.8	-0.1046	0.5541	+0.2236	+38	-41
50 Arietis	6.8	0.19	5.2	17 34.9	7 50.9	+ 1 18.6	+0.3087	0.5554	0.2206	+62	-20
53 Arietis	6.3	0.16	5.4	17 28.1	10 49.5	+ 4 10.8	+1.0730	0.5580	0.2155	+90	+24
54 Arietis	6.3	0.16	5.7	18 23.2	11 12.2	+ 4 32.6	+0.2243	0.5582	0.2154	+56	-23
δ Arietis	4.0	0.14	6.1	19 19.4	12 35.2	+ 5 52.7	-0.4282	0.5595	0.2122	+21	-57
τ_1 Arietis	5.0	-0.09	+ 6.6	+20 45.8	16 38.5	+ 9 47.0	-1.0380	0.5627	+0.2046	-16	-69

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
65 Arietis	6.0	−0.85	+ 4.3	+20 25.5	21 5 54.5	+ 2 34.9	+0.0283	0.5703	+0.2051	+46	−32
B. A. C. 1170	6.3	0.77	6.0	23 5.6	15 33.2	+11 51.5	−0.7803	0.5766	0.1830	+ 1	−67
26 Tauri	7.0	0.76	6.3	23 31.8	15 47.2	−11 55.1	−1.1670	0.5766	0.1824	−28	−66
B. A. C. 1189	6.0	0.74	5.7	21 55.3	16 12.1	−11 31.1	+0.5210	0.5766	0.1813	+46	− 4
32 Tauri	6.0	0.71	6.0	22 10.3	18 58.2	− 8 51.4	+0.7637	0.5784	0.1746	+90	+10
33 Tauri	6.3	−0.72	+ 6.2	+22 52.0	19 2.4	− 8 47.4	+0.0769	0.5786	+0.1743	+48	−26
B. A. C. 1238	6.3	0.70	6.3	22 54.1	20 34.9	− 7 18.6	+0.3091	0.5797	0.1705	+62	−14
36 Tauri	6.0	0.68	6.7	23 48.7	21 55.2	− 6 1.5	−0.3761	0.5802	0.1670	+23	−49
χ Tauri	5.7	0.59	7.8	25 22.7	22 5 3.2	+ 0 49.6	−0.8271	0.5838	0.1479	− 3	−64
B. A. C. 1347	7.3	0.58	7.4	24 9.5	5 25.9	+ 1 11.5	+0.4537	0.5842	0.1469	+73	− 4
62 Tauri	6.0	−0.56	+ 7.4	+24 3.2	5 37.8	+ 1 22.9	+0.5893	0.5842	+0.1463	+85	+ 3
W. iv, 1421	6.0	−0.29	9.2	27 53.9	23 9.7	− 5 47.8	−1.1630	0.5913	0.0949	−32	−62
136 Tauri	5.3	+0.02	9.8	27 35.4	23 15 41.4	+10 3.0	+0.2877	0.5939	+0.0427	+62	− 3
49 Aurigæ	5.7	0.31	9.9	28 6.5	24 7 32.5	+ 1 14.8	+0.0323	0.5919	−0.0085	+46	−13
53 Aurigæ	6.0	0.35	10.1	29 4.7	8 44.0	+ 2 23.4	−0.9705	0.5914	0.0123	−15	−61
54 Aurigæ	6.0	+0.36	+ 9.9	+28 21.6	9 11.6	+ 2 49.9	−0.2435	0.5914	−0.0136	+30	−28
25 Geminorum	6.5	0.37	9.8	28 17.9	9 52.8	+ 3 29.5	−0.1907	0.5913	0.0158	+33	−26
28 Geminorum	6.0	0.40	10.0	29 4.9	11 10.0	+ 4 43.4	−1.0140	0.5913	0.0199	−19	−61
W. vi, 1656	8.2	0.51	9.0	26 59.8	18 31.5	+11 46.9	+0.8868	0.5879	0.0431	+90	+30
47 Geminorum	6.0	0.56	8.9	27 2.1	21 27.2	− 9 24.5	+0.7115	0.5879	0.0521	+90	+19
53 Geminorum	6.3	+0.60	+ 9.0	+28 5.1	23 12.4	− 7 42.5	−0.4656	0.5860	−0.0574	+18	−44
59 Geminorum	6.9	0.66	8.8	27 50.8	25 2 34.1	− 4 29.9	−0.4301	0.5839	0.0675	+20	−44
ι Geminorum	4.0	0.68	8.8	28 0.7	3 1.8	− 4 3.3	−0.6325	0.5839	0.0689	+ 8	−57
b^1 Geminorum	5.3	0.70	8.8	28 30.4	4 26.3	− 2 42.3	−1.0710	0.5828	0.0731	−23	−62
b^2 Geminorum	6.3	0.71	8.8	28 8.3	4 37.6	− 2 31.3	−0.8766	0.5826	0.0736	− 8	−62
B. A. C. 2472	8.0	+0.71	+ 8.7	+28 8.0	4 57.6	− 2 12.0	−0.8956	0.5826	−0.0745	− 9	−62
υ Geminorum	4.3	0.74	8.3	27 8.1	7 3.2	− 0 11.4	−0.0309	0.5817	0.0807	+42	−23
c Geminorum	6.0	0.79	7.6	26 2.4	10 19.3	+ 3 6.9	+0.8185	0.5797	0.0911	+90	+21
φ Geminorum	5.0	0.86	7.7	27 2.6	14 3.3	+ 6 32.4	−0.5716	0.5773	0.1006	+12	−55
ω^1 Cancri	6.0	0.89	7.0	25 41.2	17 4.5	+ 9 26.3	+0.5137	0.5749	0.1089	+79	+ 2
ω^2 Cancri	6.3	+0.89	+ 6.8	+25 23.1	17 24.3	+ 9 45.4	+0.7877	0.5742	−0.1098	+90	+17
ψ^1 Cancri	6.8	0.95	6.8	26 9.6	20 50.7	−10 56.1	−0.4074	0.5719	0.1190	+21	−46
ψ^2 Cancri	5.7	0.95	6.7	25 50.0	20 57.0	−10 50.0	−0.0811	0.5719	0 1192	+39	−29
λ Cancri	5.7	1.00	5.9	24 21.6	26 1 7.1	− 6 49.5	+0.9283	0.5690	0.1298	+90	+24
υ^1 Cancri *mult.*	6.0	1.04	5.8	24 53.2	3 39.0	− 4 23.2	+0.0450	0.5665	0.1363	+46	−24
υ^2 Cancri •	5.8	+1.05	+ 5.6	+24 30.1	4 28.2	− 3 35.9	+0.3307	0.5658	−0.1383	+64	−10
υ^3 Cancri	6.0	1.07	5.5	24 26.6	5 41.1	− 2 25.7	+0.2235	0.5652	0.1411	+57	−16
υ^4 Cancri	5.7	1.08	5.4	24 27.0	6 18.6	− 1 49.6	+0.1265	0.5652	0.1428	+51	−21
ξ Cancri	5.0	1.24	3.1	22 28.8	21 57.3	−10 44.8	−0.3311	0.5521	0.1774	+26	−48
79 Cancri	6.3	1.24	3.0	22 25.9	22 23.6	−10 19.5	−0.3591	0.5512	0.1783	+24	−50
B. A. C. 3138	6.3	+1.26	+ 2.6	+21 43.4	23 51.0	− 8 55.1	+0.1186	0.5503	−0.1812	+51	−25
B. A. C. 3206	6.3	1.29	+ 1.7	20 15.0	27 4 50.5	− 4 6.0	+0.7355	0.5461	0.1906	+90	+ 5
η Leonis	3.3	1.42	− 1.3	17 17.1	28 0 35.7	− 9 0.4	−0.2377	0.5302	0.2224	+31	−49
42 Leonis	6.0	1.45	2.4	15 30.9	7 36.4	− 2 13.1	+0.0424	0.5250	0.2314	+46	−36
B. A. C. 3579	7.2	1.46	2.8	14 53.4	11 1.4	+ 1 5.5	−0.0919	0.5231	0.2355	+39	−43
i Leonis	5.7	+1.46	− 3.0	+14 41.2	12 41.5	+ 2 42.4	−0.2705	0.5218	−0.2371	+30	−53
B. A. C. 3837	6.3	1.48	6.3	8 38.7	29 9 54.4	− 0 43.2	+0.9461	0.5093	0.2554	+90	+ 8
B. A. C. 4039	7.5	1.48	8.9	4 4.6	30 9 18.4	− 1 59.5	−0.2784	0.5000	0.2650	+30	−59
b Virginis	5.8	1.49	9.0	4 15.0	10 13.6	− 1 6.0	−0.7099	0.4999	0.2653	+ 8	−85
10 Virginis	6.4	1.48	9.5	+ 2 29.8	15 29.3	+ 4 0.9	−0.2142	0.4982	0.2660	+33	−55
η Virginis	4.0	+1.46	−10.0	− 0 4.5	21 2.4	+ 9 24.7	+1.0890	0.4969	−0.2661	+90	+15
γ Virginis (*mean.*)	3.1	1.46	10.9	0 52.0	31 8 56.9	− 3 0.7	−1.2160	0.4953	0.2646	−25	−90
SATURN				1 11.5	10 6.4	− 1 53.2	−1.1710	0.4989	0.2659	−22	−90
34 Virginis	6.2	1.44	11.3	2 58.5	15 14.0	+ 3 6.5	−0.5859	0.4953	0.2629	+14	−80
k Virginis	5.9	+1.44	−11.4	− 3 14.3	18 45.9	+ 6 32.1	−1.2260	0.4949	−0.2617	−24	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
θ Virginis	4.7	+1.45	-11.7	- 4 58.3	1 0 23.4	-11 59.8	-0.8058	0.4953	-0.2593	+ 1	-90
h Virginis	5.8	1.42	12.1	9 37.0	12 55.3	+ 0 11.0	+1.0660	0.4966	0.2522	+80	-14
B. A. C. 4591	6.0	1.41	12.3	9 10.5	20 39.5	+ 7 42.4	-1.3500	0.4969	0.2468	-42	-90
λ Virginis	5.0	1.35	12.3	12 52.9	2 13 42.3	+ 0 16.3	-1.3555	0.5027	0.2308	-47	-79
B. A. C. 4896	6.6	1.31	11.8	17 20.9	3 6 38.5	- 7 17.0	-0.1799	0.5097	0.2102	+27	-54
10 Libræ	6.5	+1.31	-11.7	-17 55.1	6 46.3	- 7 9.4	+0.4311	0.5091	-0.2102	+60	-21
ι¹ Libræ	5.0	1.28	11.5	19 23.4	17 10.3	+ 2 56.0	-0.0516	0.5131	0.1953	+31	-47
ι² Libræ	6.5	1.28	11.6	19 14.8	17 43.8	+ 3 28.5	-0.3191	0.5137	0.1944	+18	-63
B. A. C. 5254	5.8	1.21	10.2	23 39.7	4 13 49.2	- 1 3.4	+0.9922	0.5232	0.1610	+66	+14
δ Scorpii	2.3	1.19	10.4	22 19.2	16 57.5	+ 1 59.2	-0.9906	0.5246	0.1551	-24	-90
19 Scorpii	5.1	+1.15	- 9.9	-23 54.9	5 2 40.3	+11 23.1	-0.6378	0.5294	-0.1362	- 5	-90
σ Scorpii	3.4	1.15	9.5	25 20.3	2 54.2	+11 36.9	+0.9095	0.5297	0.1357	+65	+ 9
25 Scorpii	7.0	1.08	9.1	25 20.1	14 58.5	- 0 42.4	-0.5821	0.5351	0.1104	- 5	-85
31 Ophiuchi	6.7	1.03	8.8	25 29.6	23 14.0	+ 7 16.6	-1.2410	0.5383	0.0918	-53	-81
B. A. C. 5800	7.5	1.01	8.2	26 51.5	6 3 33.3	+11 27.1	-0.1033	0.5403	0.0819	+16	-52
A Ophiuchi	4.9	+1.01	- 8.2	-26 26.8	4 5.9	+11 58.6	-0.6034	0.5403	-0.0806	-10	-88
B. A. C. 5813	6.8	1.01	8.3	26 23.6	4 30.0	-11 38.0	-0.6936	0.5406	0.0797	-14	-90
38 Ophiuchi	6.7	1.00	8.3	26 30.8	5 7.3	-11 2.0	-0.6106	0.5406	0.0782	-10	-90
43 Ophiuchi	5.8	0.99	7.7	28 2.4	7 40.6	- 8 33.9	+0.8853	0.5418	0.0721	+62	+ 8
3 Sagittarii *var.*	4.6	0.90	7.3	27 47.5	18 35.3	+ 1 58.4	-0.0313	0.5454	0.0456	+17	-46
B. A. C. 6127	5.1	+0.83	- 6.7	-28 28.2	7 3 43.2	+10 47.3	+0.4024	0.5474	-0.0228	+38	-20
B. A. C. 6194	5.1	0.78	6.9	27 4.9	8 10.3	- 8 55.0	-1.2040	0.5484	-0.0116	-55	-90
φ Sagittarii	3.7	0.66	6.3	27 6.1	20 21.0	+ 2 50.1	-1.1270	0.5498	+0.0197	-48	-90
τ Sagittarii	3.6	0.58	5.6	27 49.7	8 5 42.4	+11 51.7	-0.0310	0.5501	0.0439	+16	-46
B. A. C. 6628	5.9	0.50	5.1	28 4.4	13 25.6	- 4 41.3	+0.6485	0.5499	0.0636	+58	- 7
B. A. C. 6666	5.8	+0.48	- 5.2	-27 12.3	15 48.5	- 2 23.4	-0.1379	0.5496	+0.0697	+13	-52
ω Sagittarii	5.1	0.35	5.0	26 35.1	9 3 17.2	+ 8 41.1	+0.1534	0.5483	0.0984	+31	-35
b Sagittarii	4.6	0.35	4.6	27 27.3	3 46.2	+ 9 9.1	+1.1440	0.5482	0.0996	+63	+29
A Sagittarii	5.3	0.34	4.9	26 29.2	4 40.7	+10 1.7	+0.1876	0.5482	0.1017	+33	-33
B. A. C. 7077	6.4	0.19	4.6	25 18.4	19 50.4	+ 0 40.0	+0.7285	0.5450	0.1377	+65	- 3
B. A. C. 7237	6.9	+0.08	- 4.5	-24 11.1	10 4 56.4	+ 9 27.1	+0.8708	0.5428	+0.1581	+66	+ 5
χ Capricorni	5.4	-0.01	5.0	21 37.5	11 3.4	- 8 40.6	-0.8515	0.5411	0.1712	- 4	-90
φ Capricorni	5.5	0.05	5.0	21 5.8	14 17.7	- 5 32.5	-0.8445	0.5403	0.1780	- 3	-90
33 Capricorni	5.7	0.08	4.7	21 18.5	19 12.4	- 0 45.9	+0.2771	0.5391	0.1878	+47	-29
35 Capricorni	6.2	0.08	4.5	21 39.6	20 37.6	+ 0 36.4	+0.9170	0.5383	0.1904	+68	+ 8
37 Capricorni	6.0	-0.13	- 4.8	-20 33.8	11 0 8.8	+ 4 0.6	+0.4398	0.5376	+0.1972	+57	-21
38 Capricorni	6.9	0.13	4.7	20 43.7	0 10.7	+ 4 2.4	+0.6193	0.5374	0.1973	+66	-11
ε Capricorni	4.7	0.14	4.9	19 56.8	1 11.2	+ 5 0.8	-0.0053	0.5373	0.1988	+33	-44
κ Capricorni	5.0	0.17	5.0	19 21.3	3 46.3	+ 7 30.8	-0.1088	0.5364	0.2040	+29	-50
B. A. C. 7550	6.3	0.16	4.8	20 6.6	4 1.8	+ 7 45.8	+0.7389	0.5364	0.2045	+70	- 6
50 Aquarii	6.1	-0.38	- 5.3	-14 4.4	23 24.5	+ 2 30.2	-1.2870	0.5322	+0.2365	-39	-90
B. A. C. 7835	6.5	0.40	5.3	13 27.9	12 2 2.4	+ 5 2.9	-1.2880	0.5315	0.2403	-39	-88
56 Aquarii	6.3	0.39	4.9	15 8.1	2 9.3	- 5 9.5	+0.4722	0.5315	0.2406	+65	-19
74 Aquarii	6.0	0.51	5.2	12 11.2	13 11.4	- 8 9.8	+0.1580	0.5303	0.2552	+49	-36
75 Aquarii	7.0	0.50	5.0	12 45.6	13 29.4	- 7 52.4	+0.8241	0.5302	0.2555	+77	0
ψ¹ Aquarii	4.1	-0.60	- 5.1	- 9 40.3	23 52.3	+ 2 10.4	+0.3632	0.5294	+0.2667	+62	-25
χ Aquarii	5.3	0.62	5.4	8 18.7	13 0 21.5	+ 2 38.7	-0.8966	0.5295	0.2673	- 5	-90
ψ² Aquarii	4.2	0.61	5.0	9 46.1	0 51.2	+ 3 7.5	+0.7241	0.5295	0.2677	+79	- 6
ψ³ Aquarii	4.8	0.61	4.9	10 11.8	1 21.3	+ 3 36.5	+1.2960	0.5295	0.2681	+80	+34
24 Piscium	6.1	0.75	5.1	3 45.1	17 33.9	- 4 42.2	-0.8061	0.5304	0.2804	+ 1	-90
27 Piscium	5.1	-0.76	- 4.8	- 4 9.1	20 18.2	- 2 3.2	+0.3721	0.5311	+0.2821	+65	-25
29 Piscium	5.0	0.77	4.8	3 37.5	21 47.7	- 0 36.6	+0.2608	0.5311	0.2827	+58	-31
B. A. C. 8351	8.0	0.77	4.8	3 21.8	21 53.9	- 0 30.6	+0.0252	0.5314	0.2828	+45	-43
4 Ceti	6.0	0.78	4.7	3 8.8	14 0 35.8	+ 2 6.0	+0.5696	0.5319	0.2839	+78	-15
5 Ceti	6.0	0.78	4.7	3 2.7	0 49.1	+ 2 18.9	+0.5291	0.5319	0.2841	+75	-17
B. A. C. 5	5.7	-0.79	- 4.7	- 2 49.2	1 3.7	+ 2 33.0	+0.3729	0.5321	+0.2841	+65	-25

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	"	° '	d h m	h m				°	°
B. A. C. 1170	6.3	-0.35	+7.2	+23 5.6	22 9 21.0	+ 3 51.8	-0.9570	0.5692	+0.1803	- 9	-67
B. A. C. 1189	6.0	0.33	6.9	21 55.3	10 0.8	+ 4 30.1	+0.3493	0.5698	0.1785	+65	-13
32 Tauri	6.0	0.28	7.1	22 10.3	12 50.9	+ 7 13.8	+0.5927	0.5718	0.1718	+85	0
33 Tauri	6.3	0.29	7.4	22 52.0	12 55.3	+ 7 18.0	-0.0979	0.5718	0.1718	+38	-35
B. A. C. 1238	6.3	0.26	7.5	22 54.1	14 30.0	+ 8 49.1	+0.1335	0.5729	0.1678	+51	-22
36 Tauri	6.0	-0.23	+7.5	+23 48.7	15 52.2	+10 8.1	-0.5590	0.5737	+0.1646	+13	-59
χ Tauri	5.7	0.14	8.7	25 22.7	23 9.5	- 6 51.5	-1.0140	0.5781	0.1462	-16	-65
B. A. C. 1347	7.3	0.13	8.2	24 9.5	23 32.6	- 6 28.2	+0.2788	0.5786	0.1452	+61	-13
62 Tauri	6.0	-0.12	8.3	24 3.2	23 44.7	- 6 27.6	+0.4140	0.5786	0.1446	+70	- 6
136 Tauri	5.3	+0.51	9.7	27 35.4	24 10 17.0	+ 2 51.3	+0.1138	0.5924	+0.0428	+50	-12
49 Aurigæ	5.7	+0.78	+9.1	+28 6.4	25 2 11.7	- 5 53.3	-0.1346	0.5929	-0.0080	+36	-22
53 Aurigæ	6.0	0.81	9.3	29 4.6	3 23.3	- 4 44.6	-1.1400	0.5927	0.0118	-31	-61
54 Aurigæ	6.0	0.82	9.0	28 21.5	3 50.9	- 4 18.2	-0.4107	0.5927	0.0133	+20	-38
25 Geminorum	6.5	0.83	8.9	28 17.8	4 32.0	- 3 38.7	-0.3579	0.5926	0.0153	+23	-35
28 Geminorum	6.0	0.86	9.1	29 4.8	5 49.2	- 2 34.7	-1.1830	0.5925	0.0196	-36	-61
W. vi, 1656	8.2	+0.95	+7.9	+26 59.7	13 9.8	+ 4 37.9	+0.7254	0.5906	-0.0427	+90	+20
47 Geminorum	6.0	1.00	7.7	27 2.0	16 4.8	+ 7 25.8	+0.5518	0.5895	0.0516	+83	+10
53 Geminorum	6.3	1.03	7.9	28 5.1	17 49.4	+ 9 6.2	-0.6255	0.5889	0.0571	+ 8	-56
59 Geminorum	6.9	1.07	7.5	27 50.8	21 9.9	-11 41.4	-0.5883	0.5876	0.0672	+10	-54
ι Geminorum	4.0	1.09	7.5	28 0.7	21 37.4	-11 15.0	-0.7852	0.5872	0.0686	- 2	-62
b^2 Geminorum	6.3	+1.12	+7.3	+28 8.3	23 12.6	- 9 43.7	-1.0320	0.5866	-0.0732	-20	-62
B. A. C. 2472	8.0	1.12	7.3	28 8.0	23 32.4	- 9 24.6	-1.0510	0.5860	0.0743	-22	-62
ν Geminorum	4.3	1.14	6.9	27 8.1	26 1 37.1	- 7 24.9	-0.1883	0.5852	0.0805	+34	-31
c Geminorum	6.0	1.17	6.1	26 2.4	4 51.5	- 4 18.2	+0.6615	0.5835	0.0900	+90	+12
φ Geminorum	5.0	1.23	5.8	27 2.6	8 33.4	- 0 45.0	-0.7221	0.5813	0.1005	+ 3	-63
ω^1 Cancri	6.0	+1.25	+5.4	+25 41.2	11 32.6	+ 2 7.1	+0.3621	0.5795	-0.1088	+66	- 5
ω^2 Cancri	6.3	1.25	5.3	25 23.1	11 52.2	+ 2 25.9	+0.6387	0.5795	0.1097	+90	+ 9
ψ^1 Cancri	6.8	1.29	5.1	26 9.6	15 16.1	+ 5 41.9	-0.5499	0.5776	0.1190	+13	-55
ψ^2 Cancri	5.7	1.29	5.0	25 50.0	15 22.4	+ 5 48.0	-0.2269	0.5769	0.1192	+31	-37
λ Cancri	5.7	1.31	4.2	24 21.6	19 29.3	+ 9 45.4	+0.7809	0.5741	0.1302	+90	+15
ν^1 Cancri *mult.*	6.0	+1.35	+4.0	+24 53.2	21 59.2	-11 50.4	-0.0964	0.5725	-0.1366	+38	-31
ν^2 Cancri	5.8	1.35	3.8	24 30.1	22 47.6	-11 3.9	+0.1912	0.5720	0.1387	+55	-17
ν^3 Cancri	6.0	1.37	3.7	24 26.6	23 59.6	- 9 54.6	+0.0827	0.5711	0.1416	+48	-23
ν^4 Cancri	5.7	1.37	3.7	24 27.0	27 0 36.5	- 9 19.1	-0.0121	0.5705	0.1432	+43	-28
ξ Cancri	5.0	1.46	1.3	22 28.7	16 0.3	+ 5 30.7	-0.4519	0.5585	0.1781	+19	-55
79 Cancri	6.3	+1.47	+1.3	+22 25.8	16 26.0	+ 5 55.5	-0.4778	0.5576	-0.1790	+18	-57
B. A. C. 3138	6.3	1.46	1.0	21 43.4	17 51.9	+ 7 18.3	0.0000	0.5568	0.1821	+44	-31
B. A. C. 3206	6.3	1.47	+0.2	20 15.0	22 46.0	-11 58.0	+0.6160	0.5527	0.1917	+86	- 1
η Leonis	3.3	+1.50	-2.6	+17 17.1	28 18 9.1	+ 6 45.5	-0.3268	0.5373	-0.2237	+26	-55

MARCH.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
42 Leonis	6.0	+1.49	-3.5	+15 30.8	1 1 1.8	-10 35.2	-0.0368	0.5316	-0.2326	+42	-40
B. A. C. 3579	7.2	1.49	3.8	14 53.3	4 22.9	- 7 20.6	-0.1666	0.5286	0.2366	+35	-47
i Leonis	5.7	1.48	4.1	14 41.1	6 1.1	- 5 45.5	-0.3422	0.5278	0.2383	+26	-57
B. A. C. 3837	6.3	1.40	6.2	8 38.7	2 2 51.6	- 9 33.6	+0.8726	0.5144	0.2564	+90	+ 4
B. A. C. 4039	7.5	1.32	8.1	4 4.5	3 1 55.1	-11 10.5	-0.2823	0.5032	0.2654	+29	-59
b Virginis	5.8	+1.31	-8.3	+ 4 14.9	2 49.9	-10 17.4	-0.7111	0.5027	-0.2654	+ 7	-85
10 Virginis	6.4	1.27	8.5	+ 2 29.7	8 1.8	- 5 14.3	-0.2116	0.5012	0.2660	+33	-55
η Virginis	4.0	1.23	8.5	- 0 4.5	13 31.3	+ 0 5.9	+1.0920	0.4995	0.2661	+90	+16
γ Virginis (mean.)	3.1	1.18	9.2	0 52.0	4 1 19.7	+11 34.4	-1.1840	0.4973	0.2641	-23	-90
Saturn				2 1.0	6 28.3	- 7 25.6	-1.2970	0.4990	0.2638	-33	-90
38 Virginis	6.2	+1.12	-9.5	- 2 58.5	7 34.3	- 6 21.4	-0.5475	0.4962	-0.2622	+16	-77
k Virginis	5.9	1.11	9.6	3 14.3	11 5.1	- 2 56.5	-1.1810	0.4962	0.2609	-23	-90
h Virginis	5.8	0.98	9.4	9 37.0	5 5 10.8	- 9 21.0	+1.1250	0.4963	0.2508	+80	+19
B. A. C. 4591	6.0	0.92	9.7	9 10.5	12 54.4	- 1 50.4	-1.2760	0.4974	0.2451	-34	-90
λ Virginis	5.0	0.81	9.5	12 52.9	6 5 58.0	- 9 15.7	-1.2750	0.5013	0.2292	-37	-90
B. A. C. 4896	6.6	+0.69	-8.7	-17 20.8	22 56.5	+ 7 13.3	-0.0699	0.5071	-0.2087	+32	-48

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
10 Libræ	6.5	+0.69	-8.6	-17 55.0	6 23 4.4	+ 7 21.0	+0.5316	0.5094	-0.2086	+65	-16
ι^1 Libræ	5.0	0.61	8.4	19 23.3	7 9 30.1	- 6 32.9	+0.0571	0.5119	0.1940	+37	-40
ι^2 Libræ	6.5	0.61	8.5	19 14.7	10 3.7	- 5 59.3	-0.2100	0.5119	0.1934	+24	-56
B. A. C. 5254	5.8	0.43	7.5	23 39.6	8 6 12.0	-10 27.9	+1.1090	0.5216	0.1601	+66	+23
δ Scorpii	2.3	0.40	8.0	22 19.1	9 20.6	- 7 25.4	-0.8706	0.5232	0.1542	-16	-90
19 Scorpii	5.1	+0.32	-7.6	-23 54.8	19 3.8	+ 1 59.2	-0.5163	0.5282	-0.1357	+ 1	-78
σ Scorpii	3.4	0.32	7.1	25 20.2	19 17.7	+ 2 12.7	+1.0270	0.5284	0.1352	+65	+17
25 Scorpii	7.0	0.20	7.3	25 20.1	9 7 21.5	-10 7.2	-0.4567	0.5346	0.1101	+ 1	-74
31 Ophiuchi	6.7	0.13	7.3	25 59.6	15 35.5	- 2 9.6	-1.1110	0.5391	0.0918	-40	-90
B. A. C. 5800	7.5	0.09	6.8	26 51.5	19 53.8	+ 1 59.9	+0.0221	0.5411	0.0820	+23	-43
A Ophiuchi	4.9	+0.08	-7.0	-26 26.8	20 26.5	+ 2 31.5	-0.4778	0.5413	-0.0805	- 3	-76
B. A. C. 5813	6.8	0.08	7.0	26 23.6	20 50.3	+ 2 54.6	-0.5678	0.5413	0.0796	+ 8	-85
38 Ophiuchi	6.7	0.08	7.0	26 30.8	21 27.3	+ 3 30.3	-0.4852	0.5419	0.0783	- 3	-77
43 Ophiuchi	5.8	+0.05	6.5	28 2.4	10 0 0.0	+ 5 57.8	+1.0080	0.5426	0.0722	+62	+18
3 Sagittarii *var.*	4.6	-0.04	6.7	27 47.5	10 50.4	- 7 34.2	+0.0916	0.5473	0.0458	+23	-39
B. A. C. 6127	5.1	-0.12	-6.6	-28 28.2	19 53.5	+ 1 9.9	+0.5242	0.5501	-0.0230	+46	-14
B. A. C. 6194	5.1	0.17	7.1	27 4.9	11 0 17.9	+ 5 24.9	-1.0740	0.5513	-0.0117	-44	-90
φ Sagittarii	3.7	0.27	6.6	27 6.1	12 19.7	- 6 59.0	-0.9984	0.5539	+0.0198	-38	-90
τ Sagittarii	3.6	0.35	7.0	27 49.7	21 32.8	+ 1 54.2	+0.0870	0.5554	0.0439	+22	-38
B. A. C. 6628	5.9	0.42	6.9	28 4.4	12 5 8.5	+ 9 13.8	+0.7586	0.5555	0.0640	+62	0
B. A. C. 6666	5.8	-0.43	-7.2	-27 12.3	7 29.0	+11 29.3	-0.0252	0.5555	+0.0702	+19	-45
ω Sagittarii	5.1	0.51	7.5	26 35.1	18 45.0	- 1 39.0	+0.2631	0.5547	0.0990	+37	-29
B. A. C. 7077	6.4	0.65	7.7	25 18.4	13 10 58.2	-10 0.3	+0.8230	0.5521	0.1389	+65	+ 4
B. A. C. 7237	6.9	0.71	8.0	24 11.1	19 52.9	- 1 24.2	+0.9616	0.5498	0 1595	+66	+12
χ Capricorni	5.4	0.75	8.5	21 37.5	14 2 50.6	+ 5 18.8	-0.5799	0.5480	0.1749	+ 1	-83
φ Capricorni	5.5	-0.77	-8.6	-21 5.9	6 1.0	+ 8 22.6	-0.5683	0.5471	+0.1816	+ 3	-82
33 Capricorni	5.7	0.80	8.6	21 18.5	9 50.8	-11 55.5	+0.3623	0.5462	0.1895	+52	-24
35 Capricorni	6.2	0.80	8.4	21 39.6	11 14.1	-10 35.1	+0.9965	0.5456	0.1923	+68	+13
37 Capricorni	6.0	0.82	8.6	20 33.8	14 41.2	- 7 15.0	+0.5218	0.5444	0.1991	+62	-16
38 Capricorni	6.9	0.82	8.6	20 43.7	14 42.9	- 7 13.4	+0.6908	0.5448	0.1988	+69	- 6
ε Capricorni	4.7	-0.82	-8.8	-19 56.8	15 42.2	- 6 16.2	+0.0785	0.5443	+0.2013	+38	-40
κ Capricorni	5.0	0.84	8.9	19 21.3	18 13.6	- 3 50.0	-0.0261	0.5437	0.2058	+33	-45
B. A. C. 7550	6.3	0.84	8.7	20 6.6	18 29.3	- 3 34.7	+0.8166	0.5436	0.2064	+70	+ 1
B. A. C. 7835	6.5	0.94	9.1	13 27.9	15 16 5.4	- 6 42.2	-1.2160	0.5375	0.2422	-31	-90
56 Aquarii	6.3	0.94	8.8	-15 8.1	16 12.5	- 6 35.3	+0.5369	0.5375	0.2423	+68	-16
				NEW	*MOON.*						
ε Piscium	5.5	-1.13	-4.4	+ 5 4.9	18 18 38.2	- 6 35.7	+0.4105	0.5389	+0.2821	+68	-22
ζ Piscium	4.8	1.14	4.0	7 0.5	21 4.7	- 4 14.0	-0.8322	0.5388	0.2808	+ 1	-83
88 Piscium	6.2	1.13	4.1	6 25.6	21 32.1	- 3 47.5	-0.1217	0.5398	0.2806	+38	-50
B. A. C. 410	6.0	1.11	3.6	6 51.0	19 1 18.4	- 0 58.8	+0.5099	0.5409	0.2786	+75	-17
54 Ceti	5.5	-1.09	-1.8	+10 30.8	13 55.7	-11 57.4	+0.3045	0.5467	+0.2680	+61	-26
Jupiter				10 7.3	15 28.9	-10 27.4	+1.1140	0.5392	0.2631	+90	+20
B. A. C. 609	6.0	1.08	-1.2	11 46.5	17 43.9	- 8 17.0	+0.0582	0.5488	0.2643	+47	-37
29 Arietis	6.3	1.01	+0.8	14 33.6	20 8 20.8	+ 5 49.0	+1.0082	0.5568	0.2451	+90	+16
36 Arietis	6.5	0.97	1.9	17 18.7	13 11.9	+10 29.6	-0.5674	0.5598	0.2373	+14	-68
40 Arietis	6.3	-0.96	+2.3	+17 50.3	14 58.9	-11 47.3	-0.6741	0.5610	+0.2342	+ 8	-72
π Arietis	5.7	0.97	2.1	17 1.1	15 18.9	-11 28.1	+0.2230	0.5611	0.2340	+56	-26
ρ^1 Arietis	7.0	0.94	2.4	17 18.1	17 41.3	- 9 10.9	+0.4894	0.5629	0.2294	+73	-12
ρ^2 Arietis	6.0	0.95	2.5	17 54.0	18 3.4	- 8 49.6	-0.0233	0.5629	0.2287	+43	-37
ρ^3 Arietis	6.0	0.94	2.5	17 35.9	18 18.6	- 8 35.0	+0.3345	0.5630	0.2282	+63	-19
50 Arietis	6.8	-0.93	+2.7	+17 34.9	20 2.5	- 6 54.9	+0.7456	0.5641	+0.2252	+90	+ 3
54 Arietis	6.3	0.90	3.2	18 23.2	23 17.8	- 3 46.9	+0.6627	0.5658	0.2188	+90	- 1
δ Arietis	4.0	0.90	3.5	19 19.4	21 0 38.3	- 2 29.3	+0.0183	0.5674	0.2160	+45	-33
ζ Arietis	4.7	0.90	4.1	20 39.0	1 59.0	- 1 11.6	-1.0200	0.5679	0.2134	-15	-69
τ^1 Arietis	5.0	0.88	4.3	20 45.8	4 35.1	+ 1 18.5	-0.5851	0.5701	0.2080	+12	-65
τ^2 Arietis	5.3	-0.86	+4.2	+20 21.6	5 13.3	+ 1 55.3	-0.0483	0.5701	+0.2065	+41	-36

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
ε Capricorni	4.7	+0.71	−0.4	−19 56.7	8 9 22.5	− 9 0.1	+0.0320	0.5299	+0.1966	+35	−42
κ Capricorni	5.0	0.68	0.3	19 21.2	12 1.7	− 6 26.0	−0.0693	0.5291	0.2013	+31	−48
B. A. C. 7550	6.3	0.68	0.2	20 6.5	12 17.6	− 6 10.6	+0.7861	0.5290	0.2018	+70	− 1
50 Aquarii	6.1	0.40	0.5	14 4.3	9 8 12.4	−10 54.0	−1.2630	0.5241	0.2330	−37	−90
B. A. C. 7835	6.5	0.37	−0.5	13 27.8	10 54.8	− 8 16.8	−1.2680	0.5234	0.2366	−37	−90
56 Aquarii	6.3	+0.37	+0.1	−15 8.0	11 2.1	− 8 9.8	+0.5183	0.5234	+0.2368	+67	−17
74 Aquarii	6.0	0.22	−0.3	12 11.1	22 23.0	+ 2 49.8	+0.1999	0.5217	0.2509	+51	−33
75 Aquarii	7.0	0.23	0.0	12 45.5	22 41.5	+ 3 7.5	+0.8740	0.5217	0.2514	+77	+ 2
ψ¹ Aquarii	4.1	0.09	0.2	9 40.2	10 9 21.9	−10 31.9	+0.4071	0.5216	0.2626	+65	−23
χ Aquarii	5.3	0.07	0.6	8 18.6	9 51.8	−10 2.9	−0.8692	0.5214	0.2629	− 4	−90
ψ² Aquarii	4.2	+0.08	−0.1	− 9 46.0	10 22.4	− 9 33.3	+0.7707	0.5216	+0.2634	+76	− 4
ψ³ Aquarii	4.8	+0.08	+0.1	10 11.7	10 53.3	− 9 3.4	+1.3500	0.5217	0.2640	+80	+40
24 Piscium	6.1	−0.13	−0.8	3 45.0	11 3 31.4	+ 7 3.4	−0.7769	0.5232	0.2764	+ 3	−90
27 Piscium	5.1	0.15	0.5	4 9.0	6 19.6	+ 9 46.3	+0.4083	0.5240	0.2779	+67	−23
29 Piscium	5.0	0.17	0.5	3 37.4	7 51.2	+11 15.0	+0.2940	0.5244	0.2787	+60	−29
B. A. C. 8351	8.0	−0.17	−0.6	− 3 21.7	7 57.6	+11 21.1	+0.0578	0.5244	+0.2787	+47	−41
4 Ceti	6.0	0.19	0.5	3 8.7	10 43.2	− 9 58.4	+0.6070	0.5250	0.2800	+82	−13
5 Ceti	6.0	0.21	0.5	3 2.6	10 56.8	− 9 45.1	+0.5679	0.5250	0.2800	+78	−15
B. A. C. 5	5.7	0.21	0.5	2 49.1	11 11.7	− 9 30.7	+0.4085	0.5250	0.2800	+67	−23
10 Ceti	6.2	0.29	0.4	− 0 38.5	19 48.8	− 1 10.2	+0.6255	0.5281	0.2828	+84	−12
B. A. C. 237	6.7	−0.42	−0.3	+ 2 48.3	12 7 31.1	+10 9.3	+0.4652	0.5334	+0.2833	+71	−20
73 Piscium	5.9	0.49	−0.3	5 5.0	13 50.6	− 7 43.7	−0.0300	0.5365	0.2822	+42	−45
77 Piscium	5.9	0.48	0.0	4 20.3	14 17.1	− 7 18.1	+0.8385	0.5367	0.2822	+90	0
ε Piscium	5.5	0.50	−0.2	5 5.0	15 28.6	− 6 9.0	+0.4296	0.5375	0.2818	+69	−21
ζ Piscium	4.8	0.54	0.4	7 0.6	17 54.9	− 3 47.5	−0.8069	0.5389	0.2809	+ 2	−70
88 Piscium	6.2	−0.53	−0.2	+ 6 25.7	18 22.5	− 3 20.8	−0.0982	0.5394	+0.2806	+39	−48
B. A. C. 410	6.0	0.57	−0.1	6 51.1	22 8.0	+ 0 16.9	+0.5311	0.5416	0.2790	+76	−16
54 Ceti	5.0	0.67	+0.4	10 30.8	13 10 37.3	−11 39.4	+0.3267	0.5511	0.2704	+62	−25
B. A. C. 609	6.0	0.70	0.5	11 46.5	14 21.6	− 8 3.0	+0.0856	0.5531	0.2668	+48	−36
29 Arietis	6.3	0.78	1.3	14 33.6	14 4 36.7	+ 5 41.1	+1.0210	0.5659	0.2489	+90	+17
				NEW	*MOON.*						
W. iv, 1421	6.0	−0.75	+7.2	+27 53.8	16 16 22.2	− 8 59.6	−1.1190	0.6115	+0.0977	−27	−62
49 Aurigæ	5.7	0.40	9.1	28 6.4	17 22 47.3	− 3 55.0	+0.0265	0.6112	−0.0093	+45	−13
53 Aurigæ	6.0	0.37	9.2	29 4.7	23 54.7	− 2 50.5	−0.9499	0 6108	0.0131	−14	−61
54 Aurigæ	6.0	0.36	9.2	28 21.6	18 0 20.7	− 2 26.6	−0.2433	0.6108	0.0147	+30	−28
25 Geminorum	6.5	0.35	9.2	28 17.9	0 59.4	− 1 48.6	−0.1921	0.6102	0.0169	+33	−26
28 Geminorum	6.0	−0.34	+9.4	+29 4.9	2 12.1	− 0 39.1	−0.9938	0.6098	−0.0212	−17	−61
W. vi, 1656	8.2	0 24	9.0	26 59.8	9 8.6	+ 5 59.3	+0.8509	0.6059	0.0451	+90	−27
47 Geminorum	6.0	0.19	9.0	27 2.1	11 54.4	+ 8 38.0	+0.6775	0.6042	0.0543	+90	−17
53 Geminorum	6.3	0.17	9.3	28 5.2	13 33.9	+10 13.2	−0.4666	0.6030	0.0597	+18	−45
59 Geminorum	6.9	0.12	9.2	27 50.9	16 44.7	−10 44.0	−0.4373	0.6005	0.0707	+19	−44
ι Geminorum	4.0	−0.11	+9.2	+28 0.7	17 11.0	−10 18.9	−0.6327	0.6008	−0.0714	+ 8	−57
b¹ Geminorum	5.3	0.09	9.3	28 20.4	18 31.0	− 9 2.2	−1.0590	0.5989	0.0757	−22	−62
b² Geminorum	6.3	0.09	9.3	28 8.3	18 41.8	− 8 51.9	−0.8706	0.5989	0.0764	− 7	−62
B. A. C. 2472	8.0	0.09	9.3	28 8.0	19 0.7	− 8 33.7	−0.8908	0.5989	0.0774	− 8	−62
ν Geminorum	4.3	−0.06	9.0	27 8.1	20 59.8	− 6 39.6	−0.0502	0.5975	0.0835	+41	−24
c Geminorum	6.0	0.00	+8.7	+26 2.4	19 0 6.1	− 3 41.1	+0.7776	0.5948	−0.0930	+90	+19
φ Geminorum	5.0	+0.06	8.8	27 2.6	3 39.1	− 0 16.8	−0.5829	0.5916	0.1038	+11	−56
ω¹ Cancri	6.0	0.10	8.4	25 41.2	6 31.7	+ 2 28.6	+0.4744	0.5883	0.1120	+75	0
ω² Cancri	6.3	0.10	8.3	25 23.1	6 50.6	+ 2 46.8	+0.7439	0.5883	0.1129	+90	+15
ψ¹ Cancri	6.8	0.15	8.4	26 9.6	10 7.5	+ 5 55.7	−0.4250	0.5856	0.1223	+20	−48
ψ² Cancri	5.7	+0.15	+8.3	+25 50.0	10 13.5	+ 6 1.5	−0.1063	0.5853	−0.1225	+38	−30
λ Cancri	5.0	0.21	7.7	24 21.6	14 12.7	+ 9 51.2	+0.8762	0.5813	0.1334	+90	+21
ν¹ Cancri *mult.*	6.0	0.25	7.8	24 53.2	16 38.4	−11 48.8	+0.0118	0.5782	0.1397	+45	−26
ν² Cancri	5.8	0.26	7.6	24 30.1	17 25.5	−11 3.5	+0.2930	0.5772	0.1417	+62	−12
ν³ Cancri	6.0	0.28	7.5	24 26.6	18 35.5	− 9 56.3	+0.1848	0.5763	0.1446	+55	−18
ν⁴ Cancri	5.7	+0.28	+7.4	+24 27.0	19 11.5	− 9 21.7	+0.1085	0.5759	−0.1462	+50	−22

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
ξ Cancri	5.0	+0.50	+ 5.9	+22 28.8	20 10 17.2	+ 5 10.0	-0.3682	0.5601	-0.1803	+24	-50
79 Cancri	6.3	0.50	5.9	22 25 9	10 42.7	+ 5 34.6	-0.3959	0.5591	0.1812	+23	-52
B. A. C. 3138	6.3	0.52	5.6	21 43 5	12 7.4	+ 6 56.2	+0.0720	0.5580	0.1841	+48	-28
B. A. C. 3206	6.3	0.57	4.8	20 15.1	16 58.6	+11 37.0	+0.6759	0.5373	0.1933	+90	+ 2
η Leonis	3.3	0.80	2.2	17 17.1	21 12 19.6	+ 6 18.4	-0.2892	0.5331	0.2237	+29	-52
42 Leonis	6.0	+0.87	+ 1.1	+15 30.9	19 15.2	-10 59.5	-0.0175	0.5266	-0.2321	+43	-39
B. A. C. 3579	7.2	0.90	0.7	14 53.4	22 38.2	- 7 42.9	-0.1508	0.5232	0.2368	+36	-46
i Leonis	5.7	0.91	+ 0.5	14 41.2	22 0 17.5	- 6 6.8	-0.3298	0.5224	0.2375	+27	-56
B. A. C. 3837	6.3	1.07	- 3.4	8 38.3	21 27.3	- 9 35.5	+0.8525	0.5064	0.2545	+90	+ 3
B. A. C. 4039	7.5	1.25	6.7	4 4.6	23 21 0.1	-10 43.0	-0.3451	0.4956	0.2624	+26	-63
b Virginis	5.8	+1.27	- 6.7	+ 4 15.0	21 56.2	- 9 48.5	-0.7785	0.4951	-0.2625	+ 4	-81
13 Virginis	6.1	1.32	8.7	- 0 11.7	24 8 10.8	+ 0 9.0	+1.3370	0.4923	0.2631	+90	+37
η Virginis	4.0	1.33	8.6	0 4.4	8 51.8	+ 0 48.9	+1.0240	0.4921	0.2632	+90	+11
SATURN				0 4.0	15 40.2	+ 7 26.0	-0.7720	0.4919	0.2636	+ 4	-90
γ Virginis (*mean.*)	3.1	1.43	9.5	0 52.0	20 55.6	-11 26.9	-1.2800	0.4905	0.2616	-31	-90
38 Virginis	6.2	+1.47	-10.5	- 2 58.5	25 3 17.8	- 5 15.3	-0.6443	0.4900	-0.2599	+11	-86
k Virginis	5.9	1.50	10.7	3 14.3	6 52.6	- 1 46.4	-1.2860	0.4903	0.2587	-32	-90
θ Virginis	4.7	1.54	11.3	4 58.3	12 34.8	+ 3 46.5	-0.8598	0.4906	0.2563	- 2	-90
h Virginis	5.8	1.62	13.0	9 37.0	26 1 16.4	- 7 52.7	+1.0240	0.4923	0.2494	+80	+12
λ Virginis	5.0	1.79	14.0	12 52.9	27 2 19.3	- 7 31.7	-1.3840	0.4999	0.2287	-54	-90
B. A. C. 4896	6.6	+1.92	-14.5	-17 20.9	19 22.6	+ 9 2.1	-0.1774	0.5081	-0.2087	+27	-54
10 Libræ	6.5	1.92	14.6	17 55.1	19 30.6	+ 9 9.9	+0.4270	0.5081	0.2086	+59	-21
ι¹ Libræ	5.0	2.00	14.5	19 23.4	28 5 57.1	- 4 42.3	-0.0396	0.5134	0.1943	+32	-46
ι² Libræ	6.5	2.01	14.5	19 14.8	6 30.8	- 4 9.5	-0.3127	0.5139	0.1934	+18	-62
B. A. C. 5254	5.8	2.17	13.8	23 39.7	29 2 38.2	- 8 39.2	+1.0240	0.5248	0.1601	+66	+17
δ Scorpii	2.3	+2.17	-13.5	-22 19.2	5 46.5	- 5 36.8	-0.9616	0.5265	-0.1542	-22	-90
19 Scorpii	5.1	2.23	12.7	23 54.9	15 28.9	+ 3 47.0	-0.6135	0.5316	0.1355	- 4	-88
σ Scorpii	3.4	2.25	12.7	25 20.3	15 42.8	+ 4 0.5	+0.9561	0.5319	0.1349	+65	+12
25 Scorpii	7.0	2.31	11.6	25 20.2	30 3 46.2	- 8 19.8	-0.5207	0.5378	0.1095	- 2	-79
B. A. C. 5800	7.5	2.37	10.3	26 51.6	16 20.0	+ 3 48.8	-0.0278	0.5428	0.0809	+19	-46
A Ophiuchi	4.9	+2.36	-10.2	-26 26.9	16 52.7	+ 4 20.4	-0.5295	0.5431	-0.0796	- 5	-80
B. A. C. 5813	6 8	2.37	10.2	26 23.7	17 16.6	+ 4 43.6	-0.6210	0.5431	0.0787	-10	-90
38 Ophiuchi	6.7	2.37	10.1	26 30.9	17 53.8	+ 5 19.5	-0.5331	0.5434	0.0772	- 6	-81
43 Ophiuchi	5.8	2.40	9.8	28 2.5	20 27.1	+ 7 47.6	+0.9681	0.5444	0.0711	+62	+14
3 Sagittarii *var.*	6.4	2.42	8.3	27 47.5	31 7 21.8	- 5 40.1	+0.0629	0.5474	0.0446	+22	-40
B. A. C. 6127	5.1	+2.41	- 7.1	-28 28.2	16 30.7	+ 3 9.8	+0.5098	0.5494	-0.0216	+45	-15
B. A. C. 6194	5.1	+2.40	- 6.6	-27 4.9	20 58.7	+ 7 28.4	-1.0980	0.5499	-0.0102	-47	-90
JUNE.											
φ Sagittarii	3.7	+2.36	- 4.9	-27 6.1	1 9 13.6	- 4 42.3	-1.0070	0.5504	+0.0210	-39	-90
τ Sagittarii	3.6	+2.35	- 3.4	-27 49.7	18 40.0	+ 4 24.4	+0.1066	0.5495	+0.0450	+24	-38
B. A. C. 6628	5.9	2.31	2.2	28 4.3	2 2 29.0	+11 57.2	+0.8035	0.5484	0.0648	+62	+ 3
B. A. C. 6666	5.8	2.28	2.0	27 12.2	5 9.6	- 9 27.8	+0.0183	0.5478	0.0711	+21	-43
ω Sagittarii	5.1	2.19	0.4	26 35.0	16 34.4	+ 1 33.4	+0.3199	0.5446	0.0987	+40	-26
A Sagittarii	5.3	2.17	- 0.2	26 29.1	18 0.2	+ 2 56.3	+0.3545	0.5430	0.1021	+42	-24
B. A. C. 7077	6.4	+2.02	+ 1.7	-25 18.3	3 9 32.4	- 6 3.0	+0.9234	0.5387	+0.1371	+65	+10
B. A. C. 7237	6.9	1.92	2.7	24 11.0	18 55.4	+ 3 1.3	+1.0770	0.5350	0.1567	+66	+21
χ Capricorni	5.4	1.80	2.9	21 37.3	4 2 17.2	+10 8.6	-0.4949	0.5322	0.1712	+ 6	-76
27 Capricorni	6.5	1.78	2.8	20 59.1	2 45.6	+10 36.1	-1.1040	0.5318	0.1721	-30	-90
φ Capricorni	5.5	1.75	3.1	21 5.7	5 39.1	-10 36.0	-0.4778	0.5304	0.1774	+ 8	-74
33 Capricorni	5.7	+1.71	+ 3.7	-21 18.3	9 43.1	- 6 40.0	+0.4843	0.5286	+0.1849	+59	-18
35 Capricorni	6.2	1.70	4.0	21 39.4	11 11.6	- 5 14.3	+1.1390	0.5284	0.1875	+68	+24
37 Capricorni	6.0	1.65	4 0	20 33.6	14 52.0	- 1 40.9	+0.6555	0.5267	0.1940	+68	- 8
38 Capricorni	6.9	1.65	4.1	20 43.5	14 53.8	- 1 39.2	+0.8407	0.5265	0.1940	+69	+ 2
ε Capricorni	4.7	1.62	3.9	19 56.6	15 56.9	- 0 38.1	+0.2029	0.5250	0.1959	+44	-32
κ Capricorni	5.0	+1.58	+ 4.1	-19 21.1	18 38.8	+ 1 58.6	+0.1004	0.5250	+0.2003	+40	-39

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
10 Ceti	6.2	-0.84	- 4.3	- 0 38.6	14 9 30.0	+10 42.8	+0.5900	0.5340	+0.2864	+80	-14
B. A. C. 237	6.7	0.93	3.9	+ 2 48.2	20 59.9	- 2 9.9	+0.4356	0.5380	0.2864	+69	-22
73 Piscium	5.9	0.96	3.4	5 4.9	15 3 13.8	+ 3 51.3	-0.0531	0.5406	0.2850	+41	-66
77 Piscium	5.9	0.95	3.4	4 20.2	3 40.0	+ 4 16.6	+0.8123	0.5409	0.2848	+90	- 1
ε Piscium	5.5	0.97	- 3.3	5 4.9	4 50.7	+ 5 24.9	+0.4077	0.5417	0.2844	+68	-22
				NEW	*MOON.*						
ρ^1 Arietis	7.0	-1.06	+ 1.6	+17 18.0	17 2 53.9	+ 1 49.7	+0.5157	0.5715	+0.2334	+77	-10
ρ^2 Arietis	6.0	1.07	1.6	17 53.9	3 15.3	+ 2 10.2	+0.0117	0.5715	0.2328	+45	-35
ρ^3 Arietis	6.0	1.07	1.7	17 35.8	3 30.1	+ 2 24.5	+0.3661	0.5722	0.2323	+76	-17
50 Arietis	6.8	1.06	1.8	17 34.8	5 10.9	+ 4 1.4	+0.7714	0.5728	0.2302	+90	+ 4
54 Arietis	6.3	-1.05	+ 2.2	+18 23.1	8 20.4	+ 7 3.7	+0.6913	0.5753	+0.2227	+90	+ 1
δ Arietis	4 0	1.05	2.5	19 19.3	9 38.5	+ 8 18.8	+0.0558	0.5768	0.2202	+47	- 6
ζ Arietis	4.7	1.06	2.5	20 38.9	10 52.7	+ 9 30.1	-0.9800	0.5773	0.2175	-11	-69
τ^1 Arietis	5.0	1.05	3.1	20 45.7	13 28.0	+11 59.6	-0.5353	0.5797	0.2117	+15	-62
τ^2 Arietis	5 3	1.04	3.1	20 21.5	14 4.9	-11 25.0	-0.0066	0.5797	0 2104	+43	-33
65 Arietis	6.0	-1.03	+ 3.2	+20 25.5	14 44.8	-10 46.8	+0.0657	0.5811	+0.2090	+48	-30
B. A. C. 1055	6.8	1.03	3.3	21 39.9	14 47.0	-10 44.7	-1.1480	0.5811	0.2088	-25	-68
B. A. C. 1170	6.3	0.99	4.7	23 5.6	18 0 4.8	- 1 49.0	-0.7166	0.5864	0.1865	+ 5	-67
26 Tauri	7.0	0.99	4.8	23 31.8	0 18.2	- 1 36.2	-1.1070	0.5866	0.1861	-23	-66
B. A. C. 1189	6.0	0.96	4.9	21 55.3	0 42.4	- 1 12.9	+0.5542	0.5873	0.1849	+81	- 2
32 Tauri	6.0	-0.95	+ 4.8	+22 10.3	3 23.0	+ 1 21.2	+0.7945	0.5892	+0.1780	+90	+11
33 Tauri	6.3	0.95	5.0	22 22.0	3 27.4	+ 1 25.4	+0.1217	0.5892	0.1780	+51	-24
B. A. C. 1238	6.3	0.95	5.1	22 54.1	4 56.6	+ 2 50.9	+0.3489	0.5899	0.1740	+65	-12
36 Tauri	6.0	0.94	5.5	23 48.7	6 14.2	+ 4 5.4	-0.3177	0.5906	0.1703	+26	-46
χ Tauri	5.7	0.89	6.5	25 22.7	13 7.7	+10 41.9	-0.7693	0.5944	0.1509	+ 1	-65
B. A. C. 1347	7.3	-0.86	+ 6.2	+24 9.5	13 29.7	+11 3.1	+0.4945	0.5950	+0.1498	+77	- 2
62 Tauri	6.0	0.86	6.2	24 3.2	13 41.2	+11 14.1	+0.6265	0.5953	0.1494	+89	+ 5
W. iv, 1421	6.0	0.67	8.6	27 53.8	19 6 37.7	+ 3 27.9	-1.0930	0.6015	0.0968	-25	-62
β Tauri	2.0	0.59	9.1	28 31.1	12 42.3	+ 9 17.0	-1.1870	0.6032	0.0768	-35	-61
136 Tauri	5.3	0.41	9.3	27 35.4	22 37.7	- 5 13.1	+0.3352	0.6032	+0.0434	+65	0
49 Aurigæ	5.7	-0.15	+ 9.8	+28 6.5	20 14 1.4	+ 9 31.2	+0.0840	0.6005	-0.0068	+49	-10
53 Aurigæ	6.0	0.11	10.1	29 4.7	15 11.0	+10 37.9	-0.9061	0.5999	0.0119	-10	-61
54 Aurigæ	6.0	0.10	9.8	28 21.6	15 37.9	+11 3.7	-0.1883	0.5995	0.0140	+33	-25
25 Geminorum	6.5	0.09	9.8	28 17.9	16 18.0	+11 42.1	-0.1362	0.5994	0.0161	+36	-22
28 Geminorum	6.0	-0.07	10.1	29 4.9	17 33.0	-11 6.1	-0.9491	0.5984	0.0204	-14	-61
W. vi, 1656	8.2	+0.06	+ 9.3	+26 59.8	21 0 43.9	- 4 13.2	+0.9290	0.5947	-0.0436	+90	+32
47 Geminorum	6.0	0.11	9.2	27 2.1	3 35.5	- 1 28.7	+0.7530	0.5932	0.0528	+90	+21
53 Geminorum	6.3	0.14	9.6	28 5.2	5 18.4	+ 0 9.9	-0.4081	0.5924	0.0591	+21	-41
59 Geminorum	6.9	0.20	9.4	27 50.9	8 35.7	+ 3 19.2	-0.3746	0.5896	0.0683	+23	-40
ι Geminorum	4.0	0.21	9.4	28 0.8	9 2.9	+ 3 45.3	-0.5751	0.5896	0.0697	+11	-52
b^1 Geminorum	5.3	+0.23	+ 9.5	+28 20.5	10 25.6	+ 5 4.6	-1.0080	0.5887	-0.0738	-18	-62
b^2 Geminorum	6.3	0.24	9.4	28 8.4	10 36.7	+ 5 15.2	-0.8166	0.5884	0.0745	- 4	-62
B. A. C. 2472	8.0	0.24	9.5	28 8.1	10 56.3	+ 5 34.1	-0.8354	0.5880	0.0754	- 5	-62
υ Geminorum	4.3	0.28	9.1	27 8.1	12 59.4	+ 7 32.2	+0.0255	0.5869	0.0816	+46	-20
c Geminorum	6.0	0.33	8.6	26 2.4	16 11.9	+10 36.9	+0.8636	0.5843	0.0911	+90	+24
φ Geminorum	5.0	+0.40	+ 8.8	+27 2.6	19 52.1	- 9 51.6	-0.5153	0.5815	-0.1015	+15	-51
ω^1 Cancri	6.0	0.45	8.1	25 41.2	22 50.2	- 7 0.6	+0.5606	0.5788	0.1099	+83	+ 5
ω^2 Cancri	6.3	0.44	8.0	25 23.1	23 9.8	- 6 41.7	+0.8343	0.5759	0.1108	+90	+20
ψ^1 Cancri	6.8	0.50	8.1	26 9.6	22 2 33.0	- 3 26.5	-0.3528	0.5753	0.1199	+24	-43
ψ^2 Cancri	5.7	0.51	7.9	25 50.0	2 39.3	- 3 20.4	-0.0291	0.5751	0.1202	+42	-26
λ Cancri	5.7	+0.56	+ 7.2	+24 21.6	6 46.0	+ 0 36.8	+0.9714	0.5716	-0.1308	+90	+27
ν^1 Cancri *mult.*	6.0	0.61	7.3	24 53.2	9 16.2	+ 3 1.3	+0.0945	0.5696	0.1372	+50	-22
ν^2 Cancri	5.8	0.62	7.0	24 30.1	10 4.8	+ 3 48.1	+0.3784	0.5685	0.1391	+68	- 7
ν^3 Cancri	6.0	0.63	6.9	24 26.6	11 16.8	+ 4 57.4	+0.2718	0.5675	0.1421	+60	-36
ν^4 Cancri	5.7	0.64	6.9	24 27.0	11 53.9	+ 5 33.1	+0.1756	0.5670	0.1435	+54	-18
ξ Cancri	5.0	+0.86	+ 4.8	+22 28.8	23 3 25.4	- 3 29.3	-0.2846	0.5524	-0.1776	+28	-46

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
79 Cancri	6.3	+0.86	+ 4.7	+22 25.9	23 3 51.5	- 3 4.2	-0.3108	0.5520	-0.1786	+27	-47
B. A. C. 3138	6.3	0.88	4.3	21 43.5	5 18.5	- 1 40.3	+0.1651	0.5509	0.1816	+53	-23
B. A. C. 3206	6.3	0.92	3.5	20 15.1	10 16.9	+ 3 7.7	+0.7769	0.5463	0.1907	+90	+ 8
η Leonis	3.3	1.13	+ 0.5	17 17.1	24 6 2.9	- 1 45.8	-0.1971	0.5284	0.2217	+33	-47
42 Leonis	6.0	1.18	- 0.6	15 30.9	13 5.5	+ 5 3.3	+0.0812	0.5230	0.2306	+48	-34
B. A. C. 3579	7.2	+1.20	- 1.1	+14 53.4	16 31.7	+ 8 23.1	-0.0566	0.5198	-0.2343	+41	-41
ι Leonis	5.7	1.22	1.3	14 41.2	18 12.3	+10 0.6	-0.2354	0.5206	0.2362	+32	-51
B. A. C. 3837	6.3	1.33	5.0	8 38.7	25 15 36.2	+ 6 46.0	+0.9574	0.5052	0.2538	+90	+ 9
B. A. C. 4039	7.5	1.45	8.1	4 4.6	26 15 15.7	+ 5 45.2	-0.2560	0.4960	0.2632	+31	-58
b Virginis	5.8	1.46	8.2	4 15.0	16 12.0	+ 6 39.8	-0.6908	0.4957	0.2633	+ 8	-86
10 Virginis	6.4	+1.47	- 9.0	+ 2 29.8	21 31.1	+11 50.1	-0.1952	0.4942	-0.2642	+34	-54
13 Virginis	6.1	1.48	9.7	- 0 11.8	27 2 26.9	- 7 22.3	+1.4270	0.4934	0.2642	+90	+52
η Virginis	4.0	1.48	9.8	0 4.5	3 8.1	- 6 42.2	+1.1110	0.4934	0.2643	+90	+17
SATURN				0 27.1	12 22.3	+ 2 16.9	-0.9152	0.4948	0.2645	- 4	-90
γ Virginis (*mean.*)	3.1	1.53	10.7	0 52.0	15 10.7	+ 5 0.5	-1.2030	0.4922	0.2631	-24	-90
38 Virginis	6.2	+1.54	-11.4	- 2 58.5	21 31.7	+11 11.2	-0.5718	0.4920	-0.2616	+15	-79
k Virginis	5.9	1.56	11.5	3 14.3	28 1 5.9	- 9 20.5	-1.2170	0.4919	0.2604	-25	-90
θ Virginis	4.7	1.58	12.1	4 58.3	6 46.7	- 3 49.0	-0.7939	0.4925	0.2581	+ 3	-90
h Virginis	5.8	1.60	13.1	9 37.0	19 25.0	+ 8 28.5	+1.0780	0.4943	0.2513	+80	+15
B. A. C. 4591	6.0	1.64	13.2	9 10.5	29 3 12.5	- 7 57.1	-1.3430	0.4962	0.2459	-41	-84
λ Virginis	5.0	+1.68	-13.7	-12 52.9	20 20.9	+ 8 42.4	-1.3510	0.5019	-0.2305	-46	-80
B. A. C. 4896	6.6	1.72	13.6	17 20.9	30 13 20.3	+ 1 12.3	-0.1624	0.5090	0.2104	+28	-53
10 Libræ	6.5	1.72	13.6	17 55.1	13 28.1	+ 1 20.0	+0.4411	0.5093	0.2102	+60	-20
ι^1 Libræ	5.0	+1.75	-13.4	-19 23.4	23 52.8	+11 26.1	-0.0425	0.5140	-0.1955	+32	-46
MAY.											
ι^2 Libræ	6.5	+1.75	-13.4	-19 14.8	1 0 26.5	+11 58.8	-0.3106	0.5145	-0.1946	+19	-62
B. A. C. 5254	5.8	1.80	12.4	23 39.7	20 32.0	+ 7 27.2	+1.0030	0.5247	0.1613	+66	+15
δ Scorpii	2.3	1.79	12.4	22 19.2	23 40.3	+10 29.4	-0.9828	0.5260	0.1553	-24	-90
19 Scorpii	5.1	1.80	11.7	23 54.9	2 9 22.6	- 4 6.7	-0.6279	0.5310	0.1363	- 5	-90
σ Scorpii	3.4	1.81	11.5	25 20.3	9 36.5	- 3 53.3	+0.9223	0.5311	0.1359	+65	+10
25 Scorpii	7.0	+1.79	-10.6	-25 20.2	21 40.5	+ 7 47.1	-0.5684	0.5385	-0.1104	- 4	-84
31 Ophiuchi	6.7	1.78	9.8	25 29.7	3 5 55.9	- 8 14.0	-1.2280	0.5396	0.0918	-51	-90
B. A. C. 5800	7.5	1.78	9.3	26 51.6	10 15.4	- 4 3.2	-0.0870	0.5413	0.0818	+17	-49
A Ophiuchi	4.9	1.77	9.3	26 26.9	10 48.1	- 3 31.7	-0.5884	0.5414	0.0807	- 8	-86
B. A. C. 5813	6.8	1.77	9.3	26 23.7	11 12.1	- 3 8.4	-0.6810	0.5417	0.0796	-14	-90
38 Ophiuchi	6.7	+1.77	- 9.2	-26 30.9	11 49.3	- 2 32.5	-0.5958	0.5419	-0.0781	-10	-87
43 Ophiuchi	5.8	1.78	8.7	28 2.4	14 22.9	- 0 4.1	+0.9028	0.5429	0.0721	+62	+10
3 Sagittarii *var.*	4.6	1.74	7.7	27 47.5	4 1 18.8	+10 29.4	-0.0185	0.5456	0.0454	+17	-45
B. A. C. 6127	5.1	1.71	6.6	28 28.2	10 28.6	- 4 40.8	+0.4243	0.5476	0.0227	+40	-20
B. A. C. 6194	5.1	1.65	6.6	27 4.9	14 56.6	- 0 21.1	-1.1870	0.5479	-0.0112	-54	-90
φ Sagittarii	3.7	+1.57	- 5.4	-27 6.1	5 3 12.4	+11 29.1	-1.1090	0 5488	+0.0200	-46	-90
τ Sagittarii	3.6	1.52	4.2	27 49.7	12 38.6	- 3 24.5	-0.0075	0.5483	0.0440	-10	-45
B. A. C. 6628	5.9	1.46	3.3	28 4.4	20 26.9	+ 4 7.6	+0.6825	0.5474	0.0635	+60	- 5
B. A. C. 6666	5.8	1.42	3.3	27 12.3	22 51.5	+ 6 27.1	-0.1096	0.5470	0.0695	+15	-50
ω Sagittarii	5.1	1.29	2.4	26 35.0	6 10 29.9	- 6 18.6	+0.1839	0.5444	0.0979	+33	-33
b Sagittarii	4.6	+1.30	- 2.1	-27 27.2	10 59.4	- 5 50.1	+1.1830	0.5444	+0.0990	+63	+34
A Sagittarii	5.3	1.28	2.3	26 29.1	11 55.2	- 4 56.1	+0.2183	0.5443	0.1012	+35	-32
B. A. C. 7077	6.4	1.12	1.2	25 18.3	7 3 20.7	+ 9 57.9	+0.7706	0.5399	0.1431	+65	0
B. A. C. 7237	6.9	0.99	0.7	24 11.0	12 38.4	- 5 3.2	+0.9160	0.5365	0.1629	+66	+ 9
χ Capricorni	5.4	0.88	1.0	21 37.4	19 54.9	+ 1 58.8	-0.6509	0.5342	0.1714	- 2	-90
27 Capricorni	6.5	+0.87	- 1.1	-20 59.2	20 22.9	+ 2 26.0	-1.2580	0.5338	+0.1728	+25	-90
φ Capricorni	5.5	0.83	0.9	21 5.8	23 14.0	+ 5 11.4	-0.6353	0.5332	0.1778	- 2	-92
33 Capricorni	5.7	0.79	0.5	21 18.4	8 3 14.6	+ 9 4.0	+0.3179	0.5322	0.1858	+50	-26
35 Capricorni	6.2	0.78	0.2	21 39.5	4 41.8	+10 28.4	+0.9651	0.5314	0.1882	+68	+11
37 Capricorni	6.0	0.73	0.3	20 33.7	8 8.8	-10 1.6	+0.4843	0.5306	0.1948	+59	-18
38 Capricorni	6.9	+0.74	- 0.2	-20 43.6	8 20.4	-10 0.1	+0.6659	0.5306	+0.1948	+68	- 8

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
φ Capricorni	5.5	+2.57	+ 6.1	-21 5.7	1 11 21.4	- 3 6.3	-0.2888	0.5325	+0.1791	+17	-61
33 Capricorni	5.7	2.55	6.6	21 18.2	15 25.3	+ 0 49.6	+0.6795	0.5299	0.1869	+68	- 7
35 Capricorni	6 2	2.55	7.0	21 39.3	16 53.9	+ 2 15.4	+1.3310	0.5294	0.1895	+68	+50
37 Capricorni	6.0	2.49	7.3	20 33.5	20 34.4	+ 5 48.9	+0.8600	0.5278	0.1959	+69	+ 4
38 Capricorni	6.9	2.49	7.3	20 43.4	20 36.2	+ 5 50.6	+1.0450	0.5276	0.1961	+69	+16
ε Capricorni	4.7	+2.47	+ 7.5	-19 56.5	21 39.4	+ 6 51.8	+0.4065	0.5273	+0.1978	+56	-22
κ Capricorni	5.0	2.44	7.7	19 21.0	2 0 21.4	+ 9 28.6	+0.3073	0.5264	0.2016	+51	-27
B. A. C. 7550	6.3	2.45	7.9	20 6.3	0 37.6	+ 9 44.4	+1.1770	0.5260	0.2028	+70	+27
50 Aquarii	6.1	2.16	9.2	14 4.1	21 1.7	+ 5 30.3	-0.8646	0.5178	0.2316	- 7	-90
B. A. C. 7835	6.5	2.13	9.2	13 27.6	23 49.1	+ 8 12.5	-0.8652	0.5176	0.2350	- 6	-90
56 Aquarii	6.3	+2.15	+ 9.6	-15 7.8	23 56.7	+ 8 19.9	+1.1270	0.5166	+0.2352	+75	+ 8
70 Aquarii	6.2	2.00	9.7	11 7.0	3 9 10.0	- 6 43.6	-1.1120	0.5142	0.2454	-21	-90
74 Aquarii	6.0	1.98	10.2	12 10.9	11 40.9	- 4 17.2	+0.6412	0.5136	0.2478	+76	-11
75 Aquarii	7.0	1.99	10.4	12 45 3	12 0.1	- 3 58.7	+1.3280	0.5133	0.2480	+77	+39
ψ^1 Aquarii	4.1	1.84	10.7	9 40.0	23 6.2	+ 6 47.5	+0.8618	0.5114	0.2580	+80	+ 2
χ Aquarii	5.3	+1.81	+10.3	- 8 18.4	23 37.3	+ 7 17.7	-0.4404	0.5112	+0.2583	+20	-70
ψ^2 Aquarii	4.2	1.82	10.8	9 45.8	4 0 9.2	+ 7 48.6	+1.2330	0.5111	0.2587	+80	+28
24 Piscium	6.1	1.57	10.4	3 44.8	18 6.9	+ 1 14.2	-0.3474	0.5105	0.2695	+26	-64
27 Piscium	5.1	1.54	10.7	4 8.8	21 3.8	+ 4 5.8	+0.8666	0.5107	0.2706	+86	+ 1
29 Piscium	5.0	1.52	10.7	3 37.2	22 40.2	+ 5 39.3	+0.7508	0.5110	0.2712	+82	- 5
B. A. C. 8351	8.0	+1.52	+10.6	- 3 21.5	22 46.9	+ 5 45.7	+0.5069	0.5110	+0.2712	+74	-18
4 Ceti	6.0	1.49	10.8	3 8.5	5 1 41.3	+ 8 34.9	+1.0720	0.5112	0.2722	+87	+14
5 Ceti	6.0	1.48	10.8	3 2.4	1 55.6	+ 8 48.9	+1.0300	0.5112	0.2722	+87	+11
B. A. C. 5	5.7	1.48	10.7	- 2 48.9	2 11.3	+ 9 4.1	+0.8662	0.5112	0.2724	+87	+ 1
44 Piscium	5.9	1.36	9.9	+ 1 21.0	10 39.8	- 6 42.7	-1.1530	0.5133	0.2739	-20	-90
10 Ceti	6.2	+1.38	+10.6	- 0 38.3	11 26.9	- 6 6.7	+1.0810	0.5133	+0.2740	+89	+15
B. A. C. 237	6.7	1.20	9.5	+ 2 48.4	23 39.5	+ 5 53.2	+0.8997	0.5187	0.2736	+90	+ 4
B. A. C. 274	6.2	1.15	9.3	5 54.5	6 3 51.7	+ 9 57.6	-0.1148	0.5194	0.2729	-20	-84
73 Piscium	5.9	1.12	9.7	5 5.1	6 21.3	-11 37.4	+0.3787	0.5204	0.2722	+65	-21
ε Piscium	5.5	1.10	9.7	5 5.1	8 5.1	- 9 46.9	+0.8494	0.5214	0.2717	+90	+ 1
ζ Piscium	4.8	+1.07	+ 9.3	+ 7 0.7	10 40.1	- 7 26.6	-0.4293	0.5222	+0.2708	+22	-67
88 Piscium	6.2	1.07	9.6	6 25.8	11 9.3	- 6 58.4	+0.2992	0.5222	0.2705	+61	-28
B. A. C. 410	6.0	1.02	9.6	6 51.2	15 8.1	- 3 7.2	+0.9387	0.5253	0.2687	+90	+ 7
54 Ceti	5.5	0.86	9.0	10 30.9	7 4 21.3	+ 9 40.4	+0.6950	0.5342	0.2599	+90	- 5
B. A. C. 609	6.0	0.81	8.7	11 46.6	8 18.4	-10 30.4	+0.4315	0.5371	0.2565	+69	-18
19 Arietis	5.7	+0.75	+ 8.0	+14 46.8	14 29.2	- 4 32.1	-1.0460	0.5429	+0.2501	-14	-75
36 Arietis	6.5	0.58	7.6	17 18.8	8 4 16.5	+ 8 46.4	-0.2665	0.5546	0.2319	+30	-51
40 Arietis	6.3	0.58	7.6	17 50.4	6 5.0	+10 31.0	-0.3802	0.5567	0.2291	+24	-56
π Arietis	5.7	0.58	7.9	17 1.2	6 25.2	+10 50.4	+0.5225	0.5578	0.2287	+77	-10
ρ^1 Arietis	7.0	0.54	7 9	17 18.1	8 49.0	-10 51.0	+0.7812	0.5597	0.2247	+90	+ 5
ρ^2 Arietis	6.0	+0.54	+ 7.7	+17 54.0	9 11.4	-10 29.4	+0.2643	0.5598	+0.2240	+59	-22
ρ^3 Arietis	6 0	0.54	7.8	17 35.9	9 26.6	-10 14.7	+0.6238	0.5608	0.2237	+86	- 4
50 Arietis	6.8	0.52	7.8	17 34.9	11 11.3	- 8 23.9	+1.0280	0 5616	0.2206	+90	+21
54 Arietis	6.3	0.49	7.8	18 23.2	14 27.4	- 5 25.0	+0.9313	0.5656	0.2146	+90	+15
δ Arietis	4.0	0.48	7.5	19 19.4	15 48.1	- 4 6.3	+0.2803	0.5667	0.2121	+60	-20
ζ Arietis	4.7	+0.47	+ 7.2	+20 39.0	17 4.7	- 2 53.6	-0.7785	0.5678	+0.2097	+ 1	-69
τ^1 Arietis	5.0	0.44	7.2	20 45.8	19 44.6	- 0 19.8	-0.3381	0.5709	0.2045	+26	-51
τ^2 Arietis	5.3	0.43	7 4	20 21.5	20 22.6	+ 0 16.8	+0.1918	0.5715	0.2032	+55	-23
65 Arietis	6.0	0.43	7.4	20 25.5	21 3.6	+ 0 56.2	+0.2680	0.5719	0.2018	+60	-19
B. A. C. 1055	6.8	0.43	7.1	21 39.9	21 5.8	+ 0 58.3	-0.9638	0.5719	0.2018	-11	-68
9 Tauri	7.0	+0.39	+ 6.9	+22 51.5	9 2 5.0	+ 5 46.1	-1.1750	0.5766	+0.1909	-29	-67
23 Tauri	4.7	0.35	7.0	23 37.0	5 47.6	+ 9 20.0	-1.2360	0.5808	0.1824	-36	-66
B. A. C. 1170	6.3	0.34	7.1	23 5.6	6 36.0	+10 6.5	-0.5675	0.5811	0.1805	+13	-61
26 Tauri	7.0	0.34	7.0	23 31.8	6 49.7	+10 19.7	-0.9605	0.5817	0.1799	-12	-66
27 Tauri	4.0	0.34	7.0	23 43.6	6 54.6	+10 24.4	-1.1410	0.5819	0.1799	-26	-66
28 Tauri	6.2	+0.34	+ 7.0	+23 48.7	6 55.1	+10 25.0	-1.2250	0.5819	+0.1797	-35	-66

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
B. A. C. 1189	6.0	+0.33	+ 7.5	+21 55.3	9 7 14.2	+10 45.2	+0.7117	0.5820	+0.1790	+90	+ 6
32 Tauri	6.0	0.32	7.4	22 10.3	9 57.2	-10 40.2	+0.9397	0.5848	0.1722	+90	+21
33 Tauri	6.3	0.32	7.2	22 52.0	10 1.4	-10 36.2	+0.2619	0.5848	0.1720	+59	-16
B. A. C. 1238	6.3	0.31	7.2	22 54.1	11 31.9	- 9 9.4	+0.4838	0.5869	0.1673	+75	- 4
36 Tauri	6.0	0.30	7.1	23 48.7	12 50.4	- 7 54.1	-0.2020	0.5876	0.1649	+33	-39
χ Capricorni	5.7	+0.24	+ 6.9	+25 22.7	19 46.7	- 1 14.7	-0.6775	0.5940	+0.1461	+ 6	-37
B. A. C. 1347	7.3	0.24	7.2	24 9.5	20 8.7	- 0 53.6	+0.5866	0.5941	0.1451	+85	+ 4
62 Tauri	6.0	0.24	7.3	24 3.2	20 20.2	- 0 42.5	+0.7171	0.5940	0.1446	+90	+10
B. A. C. 1421	6.0	0.15	6.9	27 53.8	**10** 13 10.2	- 8 35.3	-1.0770	0.6071	0.0929	-23	-62
β Tauri	2.0	0.12	6.9	28 31.1	19 7.8	- 2 53.2	-1.1970	0.6106	0.0729	-37	-61
136 Tauri	5.3	+0.09	+ 7.2	+27 35.3	**11** 4 47.6	+ 6 21.1	+0.2650	0.6145	+0.0393	+60	- 4
				NEW	*MOON.*						
B. A. C. 3138	6.3	0.30	5.5	21 43.5	**14** 7 7.1	+ 5 31.9	-0.2468	0.5724	-0.1919	+31	-44
B. A. C. 3206	6.3	0.32	5.0	20 15.1	11 48.3	+10 2.7	+0.3247	0.5671	0.2016	+63	-17
η Leonis	3.3	+0.43	+ 3.3	+17 17.2	**15** 6 11.9	+ 3 46.5	-0.6871	0.5481	-0.2325	+ 8	-73
42 Leonis	6.0	0.47	2.6	15 30.9	12 47.2	+10 8.3	-0.4367	0.5425	0.2415	+21	-62
B. A. C. 3579	7.2	0.49	2.3	14 53.4	16 0.5	-10 44.9	-0.5785	0.5387	0.2447	+14	-71
i Leonis	5.7	0.50	2.1	14 41.2	17 34.9	- 9 13.7	-0.7571	0.5362	0.2461	+ 4	-73
l Leonis	5.3	0.54	+ 0.8	11 6.7	**16** 1 39.7	- 1 24.6	+0.9074	0.5289	0.2537	+90	+ 7
B. A. C. 3837	6.3	+0.62	- 0.6	+ 8 38.8	13 44.5	+10 17.3	+0.3505	0.5194	-0.2619	+64	-24
B. A. C. 4039	7.5	0.77	3.6	4 4.6	**17** 12 16.5	+ 8 8.8	-0.8541	0.5060	0.2683	- 1	-86
b Virginis	5.8	0.79	3.7	4 15.0	13 10.4	+ 9 1.0	-1.2770	0.5054	0.2683	-31	-86
10 Virginis	6.4	0.82	4.4	+ 2 29.8	18 16.9	-10 1.3	-0.7971	0.5032	0.2683	+ 3	-74
13 Virginis	6.1	0.84	5.6	- 0 11.7	23 1.8	- 5 24.7	+0.7876	0.5012	0.2680	+76	- 3
η Virginis	4.0	+0.85	- 5.6	- 0 4.4	23 41.4	- 4 46.1	+0.4822	0.5008	-0.2679	+72	-19
SATURN				0 44.5	**18** 8 28.3	+ 3 45.7	-1.1520	0.4958	0.2645	-20	-90
38 Virginis	6.2	1.00	7.6	2 58.4	17 31.4	-11 26.5	-1.1570	0.4967	0.2626	-21	-90
h Virginis	5.8	1.19	10.6	9 37.0	**19** 14 57.4	+ 9 23.4	+0.5141	0.4962	0.2498	+71	-18
86 Virginis	5.9	1.26	11.7	11 53.6	21 55.3	- 7 50.4	+1.2740	0.4972	0.2433	+78	+32
B. A. C. 4896	6.6	+1.68	-14.0	-17 20.9	**21** 8 29.4	+ 1 43.9	-0.5788	0.5082	-0.2061	+ 7	-81
10 Libræ	6.5	1.68	14.1	17 55.1	8 37.3	+ 1 51.6	+0.0220	0.5082	0.2061	+37	-43
ι^1 Libræ	5.0	1.82	14.4	19 23.4	19 0.0	+11 55.8	-0.4142	0.5124	0.1911	+13	-69
ι^2 Libræ	6.5	1.83	14.3	19 14.8	19 33.5	-11 31.7	-0.6794	0.5130	0.1902	- 1	-90
B. A. C. 5254	5.8	2.14	15.0	23 39.7	**22** 15 36.1	+ 7 53.8	+0.7199	0.5235	0.1563	+66	- 4
δ Scorpii	2.3	+2.17	-14.3	-22 19.2	18 43.9	+10 55.7	-1.2450	0.5252	-0.1507	-46	-86
19 Scorpii	5.1	2.32	14.0	23 54.9	**23** 4 24.8	- 3 42.0	-0.8461	0.5306	0.1315	-18	-90
σ Scorpii	3.4	2.34	14.4	25 20.3	4 38.7	- 3 28.6	+0.7020	0.5306	0.1311	+64	- 5
α Scorpii	1.4	2.39	14.3	26 11.9	8 30.3	+ 0 15.6	+1.1630	0.5325	0.1232	+64	+30
25 Scorpii	7.0	2.50	13.3	25 20.2	16 40.0	+ 8 9.1	-0.7259	0.5368	0.1056	-14	-90
B. A. C. 5800	7.5	+2.69	-12.1	-26 51.6	**25** 5 11.6	- 3 44.6	-0.1846	0.5424	-0.0790	+12	-55
A Ophiuchi	4.9	2.70	12.1	26 26.9	5 44.2	- 3 13.1	-0.6829	0.5429	0.0759	-14	-90
B. A. C. 5813	6.8	2.70	12.1	26 23.7	6 8.0	- 2 50.0	-0.7714	0.5429	0.0753	-19	-90
38 Ophiuchi	6.7	2.72	12.0	26 30.9	6 45.1	- 2 14.2	-0.6847	0.5434	0.0729	-15	-90
43 Ophiuchi	5.8	2.78	12.0	28 2.5	9 17.8	+ 0 13.3	+0.8264	0.5439	0.0673	+62	+ 4
3 Sagittarii *var.*	4.6	+2.91	-10.3	-27 47.6	20 9.6	+10 42.6	-0.0350	0.5480	-0.0407	+16	-46
B. A. C. 6127	5.1	3.03	9.0	28 28.2	**25** 5 15.4	- 4 30.7	+0.4471	0.5504	0.0177	+41	-18
B. A. C. 6194	5.1	3.04	8.0	27 4.9	9 41.7	- 0 13.6	-1.1380	0.5514	-0.0068	-50	-90
φ Sagittarii	3.7	3.16	5.6	27 6.1	21 50.9	+11 30.0	-0.9977	0.5527	+0.0251	-38	-90
τ Sagittarii	3.6	3.24	4.1	27 49.7	**26** 7 12.2	- 3 28.5	+0.1501	0.5526	0.0494	+26	-35
B. A. C. 6628	5.9	+3.30	- 2.6	-28 4.3	14 56.6	+ 3 59.7	+0.8746	0.5518	+0.0690	+62	+ 8
B. A. C. 6666	5.8	3.28	- 2.0	27 12.2	17 20.1	+ 6 18.2	+0.0803	0.5516	0.0752	+25	-39
ω Sagittarii	5.1	3.30	+ 0.4	26 35.0	**27** 4 53.2	- 6 32.9	+0.4510	0.5489	0.1039	+48	-19
A Sagittarii	5.3	3.29	0.7	26 29.1	6 17.6	- 5 11.2	+0.4927	0.5487	0.1071	+51	-16
B. A. C. 7077	6.4	3.28	3.7	25 18.3	21 38.9	+ 9 38.4	+1.1200	0.5434	0.1424	+65	+25
χ Capricorni	5.4	+3.16	+ 6.9	-21 37.4	**28** 14 12.5	+ 1 38.8	-0.2196	0.5370	+0.1765	+20	-57

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
B. A. C. 7550	6.3	+1.59	+4.3	-20 6.4	4 18 55.0	+ 2 14.3	+0.9661	0.5250	+0.2007	+70	+10
50 Aquarii	6.1	1.29	4.5	14 4.2	5 15 14.1	- 2 4.7	-1.0980	0.5183	0.2308	-22	-90
B. A. C. 7835	6.5	1.25	4.6	13 27.7	18 0.4	+ 0 36.4	-1.1000	0.5177	0.2344	-22	-90
56 Aquarii	6.3	1.28	5.1	15 7.9	18 7.9	+ 0 43.6	+0.7034	0.5177	0.2344	+75	- 7
74 Aquarii	6.0	1.10	5.2	12 11.0	6 5 45.9	-11 59.6	+0.3838	0.5154	0.2479	+61	-24
75 Aquarii	7.0	+1.10	+5.5	-12 45.4	6 4.8	-11 41.4	+1.0680	0.5151	+0.2481	+77	+15
ψ¹ Aquarii	4.1	0.95	5.3	9 40.1	17 3.0	- 1 3.2	+0.5946	0.5142	0.2587	+77	-13
χ Aquarii	5.3	0.93	4.9	8 18.5	17 33.8	- 0 33.3	-0.6994	0.5142	0.2591	+ 6	-90
ψ³ Aquarii	4.2	0.94	5.4	9 45.9	18 5.2	- 0 2.8	+0.9629	0.5139	0.2595	+80	+ 8
24 Piscium	6.1	0.68	4.6	3 44.9	7 11 45.1	- 6 55.1	-0.6155	0.5151	0.2716	+12	-83
27 Piscium	5.1	+0.65	+4.9	- 4 8.9	14 38.6	- 4 6.9	+0.5867	0.5157	+0.2730	+79	-14
B. A. C. 8351	8.0	0.63	4.8	3 21.6	16 19.6	- 2 29.0	+0.2310	0.5158	0.2737	+56	-32
4 Ceti	6.0	0.59	5.0	3 8.6	19 10.4	+ 0 16.5	+0.7863	0.5162	0.2748	+76	- 3
5 Ceti	6.0	0.59	5.0	3 2.5	19 24.4	+ 0 30.2	+0.7465	0.5165	0.2749	+83	- 6
B. A. C. 5	5.7	0.59	4.9	2 49.0	19 39.8	+ 0 45.1	+0.5848	0.5167	0.2749	+80	-14
10 Ceti	6.2	+0.49	+4.9	- 0 38.4	8 4 33.3	+ 9 22.1	+0.7971	0.5194	+0.2773	+73	- 3
B. A. C. 237	6.7	0.32	4.1	+ 2 48.4	16 37.6	- 2 56.3	+0.6212	0.5246	0.2776	+83	-12
73 Piscium	5.9	0.25	4.3	5 5.1	23 8.7	+ 3 22.4	+0.1116	0.5278	0.2768	+50	-38
77 Piscium	5.9	0.26	4.6	4 20.4	23 36.0	+ 3 48.8	+0.9938	0.5283	0.2765	+90	+10
ε Piscium	5.5	0.23	4.3	5 5.1	9 0 49.7	+ 5 0.1	+0.5777	0.5289	0.2763	+80	-14
ζ Piscium	4.8	+0.19	+4.0	+ 7 0.7	3 20.3	+ 7 25.9	-0.6797	0.5302	+0.2754	+ 9	-82
88 Piscium	6.2	0.20	4.2	6 25.8	3 48.8	+ 7 53.5	+0.0388	0.5309	0.2752	+46	-41
B. A. C. 410	6.0	0.15	4.3	6 51.2	7 40.9	+11 38.0	+0.6711	0.5336	0.2735	+88	- 8
54 Ceti	5.5	+0.01	4.1	10 30.9	20 30.8	+ 0 2.1	+0.4475	0.5434	0.2653	+70	-18
B. A. C. 609	6.0	-0.03	4.0	11 46.6	10 0 20.8	+ 3 44.3	+0.1950	0.5461	0.2618	+55	-30
29 Arietis	6.3	-0.17	+4.3	+14 33.7	14 55.3	- 6 12.2	+1.1150	0.5598	+0.2445	+90	+24
36 Arietis	6.5	0.23	4.1	17 18.8	19 42.5	- 1 35.5	-0.4607	0.5646	0.2374	- 7	-73
40 Arietis	6.3	0.25	4.1	17 50.4	21 27.8	+ 0 5.9	-0.5675	0.5668	0.2346	+14	-67
π Arietis	5.7	0.24	4.2	17 1.2	21 47.3	+ 0 24.7	+0.3202	0.5669	0.2340	+62	-20
ρ¹ Arietis	7.0	0.26	4.4	17 18.1	11 0 6.9	+ 2 39.1	+0.5801	0.5686	0.2300	+82	- 6
ρ² Arietis	6.0	-0.27	+4.3	+17 54.0	0 28.5	+ 2 59.8	+0.0709	0.5695	+0.2294	+48	-32
ρ³ Arietis	6.0	0.27	4.4	17 35.9	0 43.4	+ 3 14.2	+0.4284	0.5698	0.2291	+70	-14
50 Arietis	6.8	0.28	4.4	17 34.9	2 24.9	+ 4 51.8	+0.8281	0.5716	0.2259	+90	+ 8
54 Arietis	6.3	0.29	4.5	18 23.2	5 35.3	+ 7 55.0	+0.7401	0.5747	0.2200	+90	+ 4
δ Arietis	4.0	0.32	4.5	19 19.4	6 53.6	+ 9 10.3	+0.1003	0.5758	0.2175	+50	-29
ζ Arietis	4.7	-0.34	+4.3	+20 39.0	8 7.9	+10 21.7	-0.9397	0.5766	+0.2149	- 9	-69
τ¹ Arietis	5.0	0.35	4.5	20 45.8	10 48.3	-11 3.9	-0.5011	0.5798	0.2095	+17	-60
τ² Arietis	5.3	0.35	4.6	20 21.5	11 20.2	-10 33.5	+0.0263	0.5798	0.2083	+45	-32
65 Arietis	6.0	0.36	4.6	20 25.5	12 0.0	- 9 55.3	+0.0985	0.5800	0.2068	+48	-28
B. A. C. 1055	6.8	0.37	4.5	21 39.9	12 2.2	- 9 53.2	-1.1140	0.5808	0.1868	-22	-68
B. A. C. 1170	6.3	-0.42	+4.9	+23 5.6	21 16.6	- 1 0.9	-0.7037	0.5899	+0.1851	+ 5	-67
26 Tauri	7.0	0.42	4.9	23 31.8	21 29.9	- 0 48.1	-1.0920	0.5903	0.1845	-22	-66
B. A. C. 1189	6.0	0.41	5.2	21 55.3	21 53.8	- 0 25.2	+0.5613	0.5906	+0.1836	+82	- 3
				NEW	*MOON.*						
47 Geminorum	6.0	-0.20	+8.3	+27 2.0	14 22 3.3	- 3 25.0	+0.5701	0.6120	-0.0565	+85	+19
53 Geminorum	6.3	0.19	8.4	28 5.1	23 40.5	- 1 52.0	-0.5630	0.6109	0.0620	+12	-51
59 Geminorum	6.9	0.16	8.4	27 50.8	15 2 47.0	+ 1 6.4	-0.5383	0.6089	0.0726	+13	-50
ι Geminorum	4.0	0.15	8.5	28 0.7	3 12.7	+ 1 30.9	-0.7328	0.6087	0.0740	+ 2	-61
*b*¹ Geminorum	5.3	0.14	8.5	28 20.4	4 30.9	+ 2 45.7	-1.1580	0.6075	0.0783	-32	-62
*b*² Geminorum	6.3	-0.14	+8.5	+28 8.3	4 41.3	+ 2 55.7	-0.9734	0.6074	-0.0788	-15	-62
B. A. C. 2472	8.0	0.14	8.5	28 8.0	4 59.8	+ 3 13.4	-0.9914	0.6073	0.0798	-16	-62
υ Geminorum	4.3	0.12	8.3	27 8.1	6 56.1	+ 5 4.7	-0.1638	0.6059	0.0862	+35	-32
e Geminorum	6.0	0.08	8.0	26 2.4	9 57.7	+ 7 58.5	+0.6482	0.6039	0.0957	+90	+11
φ Geminorum	5.0	0.05	8.2	27 2.6	13 25.4	+11 17.4	-0.7020	0.6001	0.1067	+ 4	-62
ω¹ Cancri	6.0	-0.01	+7.9	+25 41.2	16 13.5	-10 1.5	+0.3390	0.5981	-0.1152	+65	- 7

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
ω^2 Cancri	6.3	-0.01	+ 7.9	+25 23.1	**15** 16 31.9	- 9 43.8	+0.6050	0.5971	-0.1161	+88	+ 7
ψ^1 Cancri	6.8	+0.03	7.9	26 9.6	19 43.5	- 6 40.3	-0.5560	0.5943	0.1255	+13	-56
ψ^2 Cancri	5.7	0.03	7.8	25 50.0	19 49.4	- 6 34.5	-0 2414	0.5955	0.1259	+30	-37
λ Cancri	5.7	0.07	7.4	24 21.6	23 42.1	- 2 51.4	+0.7241	0.5903	0.1369	+90	+11
υ^1 Cancri *mult.*	6.0	0.10	7.5	24 53.2	**16** 2 3.8	- 0 35.4	-0.1333	0.5882	0.1432	+36	-34
υ^2 Cancri	5.8	+0.11	+ 7.4	+24 30.1	2 49.7	+ 0 8.6	+0.1404	0.5872	-0.1453	+52	-19
υ^3 Cancri	6.0	0.12	7.3	24 26.6	3 57.6	+ 1 13.8	+0.0335	0.5860	0.1482	+46	-25
υ^4 Cancri	5.7	0.14	7.4	24 27.0	4 32.6	+ 1 47.4	-0.0586	0.5849	0.1503	+41	-30
ξ Cancri	5.0	0.28	6.2	22 28.8	19 12.4	- 8 6.9	-0.5335	0.5696	0.1844	+15	-60
79 Cancri	6.3	0.29	6.1	22 25.9	19 37.0	- 7 43.2	-0.5607	0.5680	0.1852	+14	-62
B. A. C. 3138	6.3	+0.31	+ 6.0	+21 43.5	20 59.3	- 6 24.0	-0.1014	0.5671	-0.1881	+38	-37
B. A. C. 3206	6.3	0.34	5.3	20 15.1	**17** 1 42.0	- 1 51.7	+0.4866	0.5614	0.1975	+75	- 8
η Leonis	3.3	0.54	3.2	17 17.2	20 29.7	- 7 43.7	-0.4911	0.5405	0.2279	+18	-63
42 Leonis	6.0	0.60	2.3	15 30.9	**18** 3 13.6	- 1 13.3	-0.2260	0.5347	0.2362	+32	-50
B. A. C. 3579	7.2	0.63	1.8	14 53.4	6 31.1	+ 1 57.7	-0.3614	0.5307	0.2398	+25	-58
i Leonis	5.7	+0.64	+ 1.7	+14 41.2	8 7.7	+ 3 31.2	-0.5384	0.5298	-0.2415	+16	-69
l Leonis	5.3	0.71	- 0.1	11 6.7	16 23.8	+11 31.5	+1.1600	0.5219	0.2490	+90	+35
B. A. C. 3837	6.3	0.82	1.7	8 38.8	**19** 4 46.1	- 0 29.0	+0.6160	0.5123	0.2571	+83	-10
B. A. C. 4039	7.5	1.02	4.6	4 4.6	**20** 3 50.7	- 2 4.6	-0.5716	0.4996	0.2644	+15	-78
b Virginis	5.8	1.00	5.4	4 15.0	4 45.8	- 1 11.4	-1.0010	0.4991	0.2644	-10	-86
10 Virginis	6.4	+1.06	- 5.8	+ 2 29.8	9 59.5	+ 3 53.5	-0.5091	0.4969	-0.2643	+18	-74
13 Virginis	6.1	1.09	7.0	- 0 11.7	14 50.7	+ 8 36.5	+1.0960	0.4955	0.2643	+90	+16
η Virginis	4.0	1.10	7.1	0 4.4	15 31.3	+ 9 16.0	+0.7866	0.4951	0.2643	+77	- 3
SATURN				0 9.9	22 8.4	- 8 18.0	-0.8596	0.4927	0.2629	- 1	-90
38 Virginis	6.2	1.26	9.1	2 58.5	**21** 9 43.7	+ 2 58.1	-0.8608	0.4920	0.2600	- 1	-90
θ Virginis	4.7	+1.35	-10.2	- 4 58.3	18 55.7	+11 54.9	-1.0680	0.4916	-0.2561	-15	-90
k Virginis	5.8	1.57	11.5	9 37.0	**22** 7 32.2	+ 0 10.5	+0.8212	0.4929	0.2485	+80	- 1
10 Libræ	6.5	1.89	14.7	17 55.1	**24** 1 39.8	- 6 53.4	+0.2860	0.5070	0.2068	+51	-28
ι^1 Libræ	5.0	2.02	14.8	19 23.4	12 6.2	+ 3 14.4	-0.1682	0.5122	0 1922	+26	-54
ι^2 Libræ	6.5	2.02	14.6	19 14.8	12 39.7	+ 3 47.1	-0.4352	0.5158	0.1913	+12	-70
B. A. C. 5254	5.8	+2.28	-14.6	-23 39.7	**25** 8 47.4	- 0 42.5	+0.9367	0.5240	-0.1581	+66	+10
δ Scorpii	2.3	2.30	14.0	22 19.2	11 55.6	+ 2 19.8	-1.0390	0.5258	0.1524	-28	-90
19 Scorpii	5.1	2.40	13.6	23 54.9	21 37.8	+11 43.4	-0.6555	0.5313	0.1336	- 7	-90
σ Scorpii	3.4	2.42	13.8	25 20.3	21 51.9	+11 57.1	+0.8944	0.5314	0.1331	+65	+ 8
25 Scorpii	7.0	2.56	12.5	25 20.2	**26** 9 54.4	- 0 24.3	-0.5590	0.5375	0.1077	- 4	-83
31 Ophiuchi	6.7	+2.63	-11.7	-25 29 7	18 8.4	+ 7 33.5	-1.1930	0.5414	-0.0892	-48	-88
B. A. C. 5800	7.5	2.69	11.3	26 51.6	22 26.9	+11 43.2	-0.0407	0.5437	0.0792	+19	-46
A Ophiuchi	4.9	2.69	11.1	26 26.9	22 59.5	-11 45.3	-0.5400	0.5437	0.0778	- 6	-82
B. A. C. 5813	6.8	2.69	11.1	26 23.7	23 23.4	-11 22.2	-0.6305	0.5439	0.0769	-11	-90
38 Ophiuchi	6.7	2.70	11.0	26 30.9	**27** 0 0.4	-10 46.5	-0.5455	0.5441	0.0754	- 7	-82
43 Ophiuchi	5.8	+2.75	-10.9	-28 2.5	2 33.4	- 8 18.7	+0.9651	0.5453	-0.0693	+62	+15
3 Sagittarii *var.*	4.6	2.83	9.2	27 47.6	13 26.2	+ 2 13.7	+0.0756	0.5488	0.0427	+22	-39
B. A. C. 6127	5.1	2.89	7.8	28 28.2	22 33.2	+10 59.7	+0.5403	0.5508	0.0197	+47	-13
B. A. C. 6194	5.1	2.89	7.1	27 4.9	**28** 3 0.2	- 8 42.6	-1.0580	0.5514	-0.0085	-44	-90
ϕ Sagittarii	3.7	2.93	5.0	27 6.1	15 11.8	+ 3 3.4	-0.9423	0.5522	+0.0230	-35	-90
τ Sagittarii	3.6	+2.95	- 3.4	-27 49.7	**29** 0 35.5	-11 52.7	+0.1873	0.5531	+0.0472	+28	-33
B. A. C. 6628	5.9	2.96	2.0	28 4.3	8 22.2	- 4 22.2	+0.8976	0.5507	0.0667	+62	+ 9
B. A. C. 6666	5.8	2.93	- 1.6	27 12.2	10 46.5	- 2 3.0	+0.1098	0.5503	0.0727	+26	-38
ω Sagittarii	5.1	2.90	+ 0.6	26 35.0	22 24.0	+ 9 10.4	+0.4399	0.5470	0.1009	+47	-19
Λ Sagittarii	5.3	2.89	0.8	26 29.1	23 49.0	+10 32.5	+0.4782	0.5468	0.1043	+49	-17
B. A. C. 7077	6.4	+2.81	+ 3.4	-25 18.2	**30** 15 17.4	+ 1 29.4	+1.0750	0.5412	+0.1393	+65	+22
JULY.											
B. A. C. 7237	6.9	+2.71	+ 4.9	-24 10.9	**1** 0 38 8	+10 32.1	+1.2470	0.5370	+0.1592	+66	+38
χ Capricorni	5.4	2.60	5.6	21 37.3	7 59.8	- 6 21.4	-0.3036	0.5337	0.1731	+16	-62
27 Capricorni	6.5	+2.58	+ 5.7	-20 59.1	8 28.1	- 5 54.0	-0.9160	0.5331	+0.1742	-18	-90

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	6 41 29.87	2.6840	N.28 6 44.2	1.461
1	6 44 10.79	2.6798	28 5 10.7	1.655
2	6 46 51.45	2.6755	28 3 25.6	1.848
3	6 49 31.85	2.6711	28 1 28.9	2.041
4	6 52 11.98	2.6665	27 59 20.7	2.232
5	6 54 51.83	2.6617	27 57 1.1	2.421
6	6 57 31.38	2.6567	27 54 30.2	2.609
7	7 0 10.63	2.6516	27 51 48.0	2.797
8	7 2 49.57	2.6464	27 48 54.5	2.985
9	7 5 28.20	2.6411	27 45 49.8	3.170
10	7 8 6.50	2.6356	27 42 34.1	3.354
11	7 10 44.47	2.6299	27 39 7.4	3.537
12	7 13 22.09	2.6241	27 35 29.7	3.718
13	7 15 59.36	2.6182	27 31 41.2	3.898
14	7 18 36.28	2.6122	27 27 41.9	4.077
15	7 21 12.83	2.6061	27 23 31.9	4.256
16	7 23 49.01	2.5998	27 19 11.3	4.432
17	7 26 24.81	2.5934	27 14 40.1	4.607
18	7 29 0.22	2.5869	27 9 58.5	4.779
19	7 31 35.24	2.5803	27 5 6.6	4.951
20	7 34 9.86	2.5737	27 0 4.4	5.122
21	7 36 44.08	2.5669	26 54 52.0	5.291
22	7 39 17.89	2.5600	26 49 29.5	5.458
23	7 41 51.28	2.5530	N.26 43 57.0	5.624

SATURDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	7 44 24.24	2.5458	N.26 38 14.6	5.788
1	7 46 56.78	2.5387	26 32 22.4	5.951
2	7 49 28.89	2.5315	26 26 20.5	6.112
3	7 52 0.56	2.5242	26 20 8.9	6.272
4	7 54 31.79	2.5168	26 13 47.8	6.431
5	7 57 2.58	2.5094	26 7 17.2	6.587
6	7 59 32.92	2.5019	26 0 37.3	6.742
7	8 2 2.80	2.4943	25 53 48.2	6.895
8	8 4 32.23	2.4867	25 46 49.9	7.047
9	8 7 1.20	2.4790	25 39 42.6	7.197
10	8 9 29.71	2.4712	25 32 26.3	7.345
11	8 11 57.75	2.4634	25 25 1.2	7.492
12	8 14 25.32	2.4556	25 17 27.3	7.637
13	8 16 52.42	2.4478	25 9 44.8	7.780
14	8 19 19.05	2.4399	25 1 53.7	7.922
15	8 21 45.21	2.4319	24 53 54.2	8.061
16	8 24 10.89	2.4239	24 45 46.4	8.199
17	8 26 36.08	2.4159	24 37 30.3	8.336
18	8 29 0.80	2.4080	24 29 6.1	8.471
19	8 31 25.04	2.4000	24 20 33.8	8.604
20	8 33 48.80	2.3919	24 11 53.6	8.735
21	8 36 12.07	2.3838	24 3 5.6	8.865
22	8 38 34.86	2.3758	23 54 9.8	8.993
23	8 40 57.17	2.3678	23 45 6.4	9.119
24	8 43 19.00	2.3597	N.23 35 55.5	9.244

SUNDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 43 19.00	2.3597	N.23 35 55.5	9.244
1	8 45 40.34	2.3517	23 26 37.1	9.367
2	8 48 1.20	2.3437	23 17 11.4	9.488
3	8 50 21.58	2.3356	23 7 38.5	9.608
4	8 52 41.47	2.3275	22 57 58.5	9.726
5	8 55 0.88	2.3195	22 48 11.4	9.842
6	8 57 19.81	2.3115	22 38 17.4	9.957
7	8 59 38.26	2.3035	22 28 16.6	10.069
8	9 1 56.23	2.2955	22 18 9.1	10.181
9	9 4 13.72	2.2875	22 7 54.9	10.291
10	9 6 30.73	2.2796	21 57 34.2	10.398
11	9 8 47.27	2.2717	21 47 7.1	10.505
12	9 11 3.33	2.2638	21 36 33.6	10.610
13	9 13 18.92	2.2559	21 25 53.9	10.713
14	9 15 34.04	2.2481	21 15 8.1	10.814
15	9 17 48.70	2.2404	21 4 16.2	10.914
16	9 20 2.89	2.2327	20 53 18.4	11.012
17	9 22 16.62	2.2250	20 42 14.7	11.109
18	9 24 29.89	2.2173	20 31 5.3	11.204
19	9 26 42.70	2.2097	20 19 50.2	11.298
20	9 28 55.06	2.2021	20 8 29.5	11.390
21	9 31 6.96	2.1946	19 57 3.4	11.480
22	9 33 18.41	2.1872	19 45 31.9	11.570
23	9 35 29.42	2.1798	N.19 33 55.0	11.657

MONDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 37 39.98	2.1724	N.19 22 13.0	11.742
1	9 39 50.10	2.1651	19 10 25.9	11.827
2	9 41 59.79	2.1578	18 58 33.7	11.911
3	9 44 9.04	2.1506	18 46 36.6	11.992
4	9 46 17.86	2.1434	18 34 34.7	12.072
5	9 48 26.25	2.1363	18 22 28.0	12.150
6	9 50 34.22	2.1293	18 10 16.7	12.227
7	9 52 41.77	2.1224	17 58 0.8	12.303
8	9 54 48.91	2.1155	17 45 40.4	12.378
9	9 56 55.63	2.1087	17 33 15.5	12.451
10	9 59 1.95	2.1019	17 20 46.3	12.522
11	10 1 7.86	2.0952	17 8 12.9	12.591
12	10 3 13.37	2.0886	16 55 35.4	12.659
13	10 5 18.49	2.0820	16 42 53.8	12.727
14	10 7 23.21	2.0754	16 30 8.2	12.793
15	10 9 27.54	2.0690	16 17 18.6	12.858
16	10 11 31.49	2.0627	16 4 25.2	12.921
17	10 13 35.07	2.0565	15 51 28.1	12.982
18	10 15 38.27	2.0503	15 38 27.4	13.042
19	10 17 41.10	2.0441	15 25 23.1	13.100
20	10 19 43.56	2.0380	15 12 15.2	13.160
21	10 21 45.66	2.0320	14 59 3.9	13.216
22	10 23 47.40	2.0261	14 45 49.3	13.272
23	10 25 48.79	2.0203	14 32 31.3	13.327
24	10 27 49.83	2.0145	N.14 19 10.1	13.379

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 25.					**THURSDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 27 49.83	2.0145	N.14 19 10.1	13.379	0	11 59 22.54	1.8304	N. 2 57 49.4	14.614
1	10 29 50.53	2.0088	14 5 45.8	13.430	1	12 1 12.30	1.8285	2 43 12.5	14.615
2	10 31 50.89	2.0032	13 52 18.5	13.480	2	12 3 1.96	1.8267	2 28 35.6	14.616
3	10 33 50.91	1.9976	13 38 48.2	13.529	3	12 4 51.51	1.8250	2 13 58.6	14.616
4	10 35 50.60	1.9922	13 25 15.0	13.577	4	12 6 40.96	1.8233	1 59 21.7	14.615
5	10 37 49.97	1.9868	13 11 38.9	13.624	5	12 8 30.31	1.8217	1 44 44.8	14.614
6	10 39 49.02	1.9815	12 58 0.1	13.669	6	12 10 19.56	1.8202	1 30 8.0	14.612
7	10 41 47.75	1.9763	12 44 18.6	13.713	7	12 12 8.73	1.8187	1 15 31.4	14.608
8	10 43 46.17	1.9711	12 30 34.5	13.756	8	12 13 57.81	1.8174	1 0 55.1	14.603
9	10 45 44.28	1.9660	12 16 47.9	13.798	9	12 15 46.81	1.8161	0 46 19.1	14.598
10	10 47 42.09	1.9611	12 2 58.8	13.839	10	12 17 35.74	1.8148	0 31 43.4	14.592
11	10 49 39.61	1.9562	11 49 7.2	13.879	11	12 19 24.59	1.8136	0 17 8.1	14.584
12	10 51 36.83	1.9513	11 35 13.3	13.917	12	12 21 13.37	1.8125	N. 0 2 33.3	14.576
13	10 53 33.76	1.9465	11 21 17.2	13.954	13	12 23 2.09	1.8116	S. 0 12 1.0	14.568
14	10 55 30.41	1.9419	11 7 18.8	13.991	14	12 24 50.76	1.8107	0 26 34.8	14.559
15	10 57 26.79	1.9373	10 53 18.3	14.026	15	12 26 39.37	1.8098	0 41 8.1	14.549
16	10 59 22.89	1.9327	10 39 15.7	14.060	16	12 28 27.93	1.8090	0 55 40.7	14.537
17	11 1 18.72	1.9283	10 25 11.1	14.092	17	12 30 16.45	1.8083	1 10 12.6	14.525
18	11 3 14.29	1.9240	10 11 4.6	14.124	18	12 32 4.93	1.8077	1 24 43.7	14.512
19	11 5 9.60	1.9197	9 56 56.2	14.155	19	12 33 53.37	1.8071	1 39 14.0	14.498
20	11 7 4.66	1.9155	9 42 46.0	14.185	20	12 35 41.78	1.8066	1 53 43.5	14.484
21	11 8 59.46	1.9113	9 28 34.0	14.214	21	12 37 30.16	1.8061	2 8 12.1	14.468
22	11 10 54.02	1.9073	9 14 20.3	14.242	22	12 39 18.51	1.8057	2 22 39.7	14.453
23	11 12 48.34	1.9034	N. 9 0 5.0	14.268	23	12 41 6.85	1.8055	S. 2 37 6.4	14.437
	WEDNESDAY 26.					**FRIDAY 28.**			
0	11 14 42.43	1.8996	N. 8 45 48.2	14.293	0	12 42 55.17	1.8053	S. 2 51 32.1	14.419
1	11 16 36.29	1.8958	8 31 29.9	14.318	1	12 44 43.48	1.8052	3 5 56.7	14.400
2	11 18 29.92	1.8920	8 17 10.1	14.342	2	12 46 31.79	1.8051	3 20 20.1	14.380
3	11 20 23.33	1.8883	8 2 48.9	14.364	3	12 48 20.09	1.8050	3 34 42.3	14.359
4	11 22 16.52	1.8848	7 48 26.4	14.386	4	12 50 8.39	1.8051	3 49 3.2	14.338
5	11 24 9.51	1.8814	7 34 2.6	14.406	5	12 51 56.70	1.8052	4 3 22.9	14.317
6	11 26 2.29	1.8780	7 19 37.7	14.425	6	12 53 45.02	1.8054	4 17 41.3	14.295
7	11 27 54.87	1.8747	7 5 11.6	14.444	7	12 55 33.35	1.8057	4 31 58.3	14.271
8	11 29 47.25	1.8714	6 50 44.4	14.461	8	12 57 21.70	1.8060	4 46 13.8	14.246
9	11 31 39.44	1.8683	6 36 16.3	14.477	9	12 59 10.07	1.8064	5 0 27.8	14.221
10	11 33 31.45	1.8652	6 21 47.2	14.493	10	13 0 58.47	1.8069	5 14 40.3	14.195
11	11 35 23.27	1.8622	6 7 17.1	14.508	11	13 2 46.90	1.8074	5 28 51.2	14.168
12	11 37 14.91	1.8593	5 52 46.2	14.522	12	13 4 35.36	1.8080	5 43 0.5	14.141
13	11 39 6.38	1.8565	5 38 14.5	14.535	13	13 6 23.86	1.8087	5 57 8.1	14.112
14	11 40 57.69	1.8537	5 23 42.0	14.547	14	13 8 12.40	1.8094	6 11 14.0	14.083
15	11 42 48.83	1.8510	5 9 8.9	14.557	15	13 10 0.99	1.8102	6 25 18.1	14.053
16	11 44 39.81	1.8484	4 54 35.2	14.567	16	13 11 49.63	1.8111	6 39 20.4	14.022
17	11 46 30.64	1.8459	4 40 0.9	14.577	17	13 13 38.32	1.8119	6 53 20.8	13.990
18	11 48 21.32	1.8435	4 25 26.0	14.585	18	13 15 27.06	1.8129	7 7 19.2	13.958
19	11 50 11.86	1.8411	4 10 50.7	14.592	19	13 17 15.87	1.8140	7 21 15.7	13.925
20	11 52 2.26	1.8388	3 56 15.0	14.597	20	13 19 4.74	1.8151	7 35 10.2	13.891
21	11 53 52.52	1.8366	3 41 39.0	14.602	21	13 20 53.68	1.8163	7 49 2.6	13.856
22	11 55 42.65	1.8345	3 27 2.7	14.607	22	13 22 42.69	1.8175	8 2 52.9	13.820
23	11 57 32.66	1.8324	3 12 26.2	14.611	23	13 24 31.78	1.8188	8 16 41.0	13.783
24	11 59 22.54	1.8304	N. 2 57 49.4	14.614	24	13 26 20.95	1.8202	S. 8 30 26.9	13.746

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 26 20.95	1.8202	S. 8 30 26.9	13.746
1	13 28 10.20	1.8216	8 44 10.5	13.708
2	13 29 59.54	1.8231	8 57 51.8	13.669
3	13 31 48.97	1.8247	9 11 30.8	13.630
4	13 33 38.50	1.8262	9 25 7.4	13.589
5	13 35 28.12	1.8278	9 38 41.5	13.547
6	13 37 17.84	1.8296	9 52 13.0	13.504
7	13 39 7.67	1.8314	10 5 42.0	13.461
8	13 40 57.61	1.8332	10 19 8.4	13.418
9	13 42 47.66	1.8351	10 32 32.2	13.374
10	13 44 37.82	1.8370	10 45 53.3	13.328
11	13 46 28.10	1.8391	10 59 11.6	13.281
12	13 48 18.51	1.8412	11 12 27.0	13.233
13	13 50 9.04	1.8433	11 25 39.6	13.186
14	13 51 59.70	1.8454	11 38 49.3	13.137
15	13 53 50.49	1.8477	11 51 56.1	13.088
16	13 55 41.42	1.8500	12 4 59.9	13.037
17	13 57 32.49	1.8523	12 18 0.6	12.986
18	13 59 23.69	1.8546	12 30 58.2	12.934
19	14 1 15.04	1.8571	12 43 52.7	12.881
20	14 3 6.54	1.8596	12 56 43.9	12.827
21	14 4 58.19	1.8621	13 9 31.9	12.772
22	14 6 49.99	1.8647	13 22 16.6	12.717
23	14 8 41.95	1.8673	S. 13 34 57.9	12.661

SUNDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 10 34.07	1.8700	S. 13 47 35.9	12.605
1	14 12 26.35	1.8728	14 0 10.5	12.547
2	14 14 18.80	1.8756	14 12 41.5	12.487
3	14 16 11.42	1.8784	14 25 8.9	12.427
4	14 18 4.21	1.8813	14 37 32.7	12.367
5	14 19 57.17	1.8842	14 49 52.9	12.306
6	14 21 50.31	1.8872	15 2 9.4	12.244
7	14 23 43.63	1.8902	15 14 22.2	12.181
8	14 25 37.13	1.8932	15 26 31.1	12.117
9	14 27 30.81	1.8963	15 38 36.2	12.052
10	14 29 24.68	1.8994	15 50 37.4	11.987
11	14 31 18.74	1.9026	16 2 34.6	11.921
12	14 33 13.00	1.9059	16 14 27.9	11.854
13	14 35 7.45	1.9091	16 26 17.1	11.786
14	14 37 2.10	1.9124	16 38 2.2	11.717
15	14 38 56.94	1.9158	16 49 43.1	11.647
16	14 40 51.99	1.9192	17 1 19.8	11.577
17	14 42 47.24	1.9225	17 12 52.3	11.505
18	14 44 42.69	1.9259	17 24 20.4	11.433
19	14 46 38.35	1.9295	17 35 44.2	11.360
20	14 48 34.23	1.9331	17 47 3.6	11.286
21	14 50 30.32	1.9366	17 58 18.5	11.211
22	14 52 26.62	1.9402	18 9 28.9	11.135
23	14 54 23.14	1.9438	18 20 34.7	11.058
24	14 56 19.87	1.9474	S. 18 31 35.9	10.981

MONDAY, MAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 56 19.87	1.9474	S. 18 31 35.9	10.981

PHASES OF THE MOON.

		d	h	m
☾ Last Quarter . .	April	8	23	35.3
● New Moon		16	2	34.5
☽ First Quarter		22	17	26.0
○ Full Moon		30	11	23.1

		d	h
☾ Apogee	April	5	6.5
☾ Perigee		17	9.9

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Pollux	W.	82° 21′ 47″	2894	83° 54′ 13″	2902	85° 26′ 29″	2910	86° 58′ 35″	2918
	Regulus	W.	45 51 37	2914	47 23 38	2921	48 55 30	2928	50 27 13	2935
	Antares	E.	54 20 18	2895	52 47 53	2903	51 15 37	2910	49 43 31	2918
	α Aquilæ	E.	103 17 25	3790	102 2 12	3787	100 46 56	3786	99 31 39	3786
2	Pollux	W.	94 36 41	2955	96 7 50	2963	97 38 51	2969	99 9 43	2975
	Regulus	W.	58 3 40	2969	59 34 32	2975	61 5 16	2981	62 35 52	2989
	Antares	E.	42 5 28	2956	40 34 20	2962	39 3 20	2969	37 32 29	2977
	α Aquilæ	E.	93 15 32	3799	92 0 29	3805	90 45 32	3812	89 30 42	3819
3	Regulus	W.	70 6 52	3019	71 36 41	3024	73 6 24	3030	74 36 0	3034
	SATURN	W.	29 33 45	2980	31 4 23	2986	32 34 53	2992	34 5 16	2997
	α Aquilæ	E.	83 18 38	3867	82 4 45	3879	80 51 4	3892	79 37 36	3907
4	Regulus	W.	82 2 29	3058	83 31 30	3061	85 0 27	3065	86 29 19	3069
	SATURN	W.	41 35 40	3020	43 5 28	3023	44 35 12	3027	46 4 51	3030
	Spica	W.	27 59 43	3066	29 28 34	3069	30 57 22	3071	32 26 7	3073
	α Aquilæ	E.	73 34 9	3989	72 22 19	4010	71 10 49	4031	69 59 40	4052
	Fomalhaut	E.	100 26 38	3240	99 1 16	3242	97 35 56	3244	96 10 39	3247
5	Regulus	W.	93 52 42	3082	95 21 14	3083	96 49 44	3084	98 18 13	3085
	SATURN	W.	53 32 11	3043	55 1 30	3044	56 30 48	3046	58 0 4	3046
	Spica	W.	39 49 19	3081	41 17 52	3082	42 46 23	3082	44 14 54	3082
	α Aquilæ	E.	64 9 44	4186	63 1 5	4217	61 52 55	4251	60 45 17	4287
	Fomalhaut	E.	89 4 54	3257	87 39 52	3259	86 14 53	3261	84 49 56	3263
6	SATURN	W.	65 26 21	3045	66 55 38	3043	68 24 57	3041	69 54 19	3039
	Spica	W.	51 37 32	3079	53 6 7	3078	54 34 44	3075	56 3 24	3073
	α Aquilæ	E.	55 16 6	4506	54 12 19	4560	53 9 20	4618	52 7 11	4682
	Fomalhaut	E.	77 45 38	3270	76 20 51	3270	74 56 5	3272	73 31 21	3272
	α Pegasi	E.	98 45 18	3424	97 23 29	3420	96 1 35	3416	94 39 37	3413
7	SATURN	W.	77 21 58	3022	78 51 44	3017	80 21 36	3011	81 51 35	3005
	Spica	W.	63 27 37	3055	64 56 42	3049	66 25 54	3043	67 55 13	3038
	α Aquilæ	E.	47 11 3	5082	46 15 12	5186	45 20 40	5299	44 27 32	5422
	Fomalhaut	E.	66 27 49	3276	65 3 9	3276	63 38 29	3277	62 13 51	3277
	α Pegasi	E.	87 48 43	3393	86 26 19	3390	85 3 51	3386	83 41 19	3382
	SUN	E.	111 55 42	3423	110 33 51	3416	109 11 53	3411	107 49 49	3404
8	SATURN	W.	89 23 28	2969	90 54 19	2963	92 25 20	2953	93 56 32	2943
	Spica	W.	75 23 47	3001	76 53 58	2993	78 24 19	2984	79 54 52	2974
	Antares	W.	29 29 40	3000	30 59 53	2992	32 30 16	2982	34 0 51	2973
	Fomalhaut	E.	55 10 57	3286	53 46 29	3288	52 22 4	3292	50 57 43	3296
	α Pegasi	E.	76 47 33	3364	75 24 35	3361	74 1 34	3358	72 38 29	3354
	SUN	E.	100 57 27	3365	99 34 31	3356	98 11 24	3346	96 48 6	3336
9	SATURN	W.	101 35 41	2891	103 8 12	2878	104 40 59	2866	106 14 2	2853
	Spica	W.	87 30 46	2921	89 2 38	2909	90 34 46	2896	92 7 10	2883
	Antares	W.	41 36 58	2918	43 8 54	2906	44 41 5	2894	46 13 32	2880
	Fomalhaut	E.	43 57 37	3336	42 34 7	3348	41 10 51	3365	39 47 54	3383
	α Pegasi	E.	65 42 15	3343	64 18 53	3342	62 55 30	3342	61 32 7	3343
	SUN	E.	89 48 25	3277	88 23 47	3264	86 58 53	3251	85 33 44	3238

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Pollux	W.	88° 30′ 31″	2925	90° 2′ 18″	2933	91° 33′ 55″	2940	93° 5′ 23″	2948
	Regulus	W.	51 58 48	2942	53 30 14	2949	55 1 31	2955	56 32 40	2962
	Antares	E.	48 11 35	2926	46 39 49	2933	45 8 12	2941	43 36 45	2949
	α Aquilæ	E.	98 16 22	3787	97 1 6	3788	95 45 51	3792	94 30 40	3794
2	Pollux	W.	100 40 27	2982	102 11 2	2989	103 41 29	2995	105 11 48	3001
	Regulus	W.	64 6 19	2994	65 36 39	3001	67 6 51	3007	68 36 55	3013
	Antares	E.	36 1 47	2984	34 31 14	2990	33 0 49	2997	31 30 33	3003
	α Aquilæ	E.	88 15 59	3827	87 1 25	3835	85 46 59	3845	84 32 43	3856
3	Regulus	W.	76 5 30	3039	77 34 54	3045	79 4 11	3049	80 33 23	3054
	Saturn	W.	35 35 33	3002	37 5 43	3006	38 35 48	3011	40 5 47	3016
	α Aquilæ	E.	78 24 23	3921	77 11 25	3937	75 58 43	3953	74 46 17	3971
4	Regulus	W.	87 58 6	3072	89 26 50	3075	90 55 30	3078	92 24 7	3079
	Saturn	W.	47 34 26	3034	49 3 57	3036	50 33 25	3039	52 2 49	3041
	Spica	W.	33 54 50	3074	35 23 31	3077	36 52 9	3078	38 20 45	3080
	α Aquilæ	E.	68 48 52	4076	67 38 27	4102	66 28 27	4128	65 18 52	4156
	Fomalhaut	E.	94 45 25	3248	93 20 13	3251	91 55 4	3253	90 29 58	3255
5	Regulus	W.	99 46 41	3086	101 15 8	3086	102 43 35	3086	104 12 2	3085
	Saturn	W.	59 29 20	3047	60 58 35	3047	62 27 50	3047	63 57 5	3046
	Spica	W.	45 43 25	3082	47 11 56	3082	48 40 27	3082	50 8 59	3081
	α Aquilæ	E.	59 38 12	4325	58 31 42	4366	57 25 50	4409	56 20 37	4456
	Fomalhaut	E.	83 25 1	3265	82 0 8	3265	80 35 16	3267	79 10 26	3269
6	Saturn	W.	71 23 43	3036	72 53 11	3034	74 22 42	3030	75 52 18	3026
	Spica	W.	57 32 6	3070	59 0 52	3067	60 29 42	3063	61 58 37	3059
	α Aquilæ	E.	51 5 56	4750	50 5 38	4822	49 6 20	4902	48 8 7	4980
	Fomalhaut	E.	72 6 37	3273	70 41 54	3274	69 17 12	3274	67 52 30	3275
	α Pegasi	E.	93 17 35	3409	91 55 29	3405	90 33 18	3401	89 11 3	3397
7	Saturn	W.	83 21 41	2999	84 51 55	2993	86 22 17	2985	87 52 48	2978
	Spica	W.	69 24 39	3031	70 54 13	3025	72 23 55	3018	73 53 46	3009
	α Aquilæ	E.	43 35 53	5559	42 45 50	5707	41 57 28	5874	41 10 55	6056
	Fomalhaut	E.	60 49 13	3278	59 24 36	3280	58 0 1	3282	56 35 28	3283
	α Pegasi	E.	82 18 42	3379	80 56 1	3375	79 33 16	3372	78 10 27	3367
	Sun	E.	106 27 37	3398	105 5 18	3390	103 42 50	3382	102 20 13	3374
8	Saturn	W.	95 27 56	2933	96 59 33	2924	98 31 22	2913	100 3 24	2901
	Spica	W.	81 25 37	2965	82 56 34	2954	84 27 44	2943	85 59 8	2932
	Antares	W.	35 31 38	2962	37 2 38	2952	38 33 51	2942	40 5 17	2930
	Fomalhaut	E.	49 33 27	3301	48 9 17	3307	46 45 14	3315	45 21 20	3325
	α Pegasi	E.	71 15 20	3351	69 52 8	3349	68 28 53	3346	67 5 35	3345
	Sun	E.	95 24 36	3325	94 0 54	3313	92 36 58	3302	91 12 49	3289
9	Saturn	W.	107 47 21	2840	109 20 57	2826	110 54 51	2812	112 29 3	2798
	Spica	W.	93 39 50	2870	95 12 47	2856	96 46 2	2842	98 19 35	2828
	Antares	W.	47 46 16	2867	49 19 17	2854	50 52 35	2839	52 26 12	2825
	Fomalhaut	E.	38 25 18	3406	37 3 8	3432	35 41 28	3464	34 20 24	3502
	α Pegasi	E.	60 8 45	3344	58 45 24	3346	57 22 6	3350	55 58 52	3356
	Sun	E.	84 8 18	3222	82 42 35	3207	81 16 34	3192	79 50 15	3176

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L of Diff.
10	Spica	W.	99° 53′ 26″	2813	101° 27′ 37″	2798	103° 2′ 7″	2783	104° 36′ 57″	2767
	Antares	W.	54 0 8	2810	55 34 23	2795	57 8 58	2779	58 43 53	2764
	α Pegasi	E.	54 35 44	3361	53 12 43	3369	51 49 51	3379	50 27 11	3392
	Sun	E.	78 23 37	3160	76 56 40	3143	75 29 23	3127	74 1 46	3110
11	Spica	W.	112 36 27	2684	114 13 28	2668	115 50 51	2650	117 28 38	2633
	Antares	W.	66 43 47	2681	68 20 53	2663	69 58 23	2646	71 36 16	2627
	Sun	E.	66 38 21	3020	65 8 33	3001	63 38 21	2981	62 7 45	2963
12	Antares	W.	79 51 50	2537	81 32 12	2519	83 12 59	2500	84 54 12	2482
	α Aquilæ	W.	43 21 57	4955	44 19 28	4789	45 19 13	4638	46 21 5	4498
	Sun	E.	54 28 42	2865	52 55 38	2845	51 22 8	2825	49 48 13	2805
13	Antares	W.	93 26 44	2391	95 10 32	2373	96 54 45	2355	98 39 24	2338
	α Aquilæ	W.	51 58 53	3943	53 11 29	3855	54 25 35	3773	55 41 5	3697
	Sun	E.	41 52 8	2707	40 15 37	2688	38 38 41	2669	37 1 20	2650
14	Antares	W.	107 28 52	2255	109 15 58	2239	111 3 27	2224	112 51 19	2209
	α Aquilæ	W.	62 17 18	3386	63 39 51	3335	65 3 22	3288	66 27 47	3244
	Sun	E.	28 48 18	2561	27 8 29	2544	25 28 17	2527	23 47 42	2512
17	Sun	W.	12 29 58	2321	14 15 27	2320	16 0 58	2320	17 46 29	2320
	Pollux	E.	71 36 19	2032	69 43 34	2031	67 50 48	2030	65 58 1	2030
	Regulus	E.	108 11 42	2042	106 19 14	2041	104 26 44	2041	102 34 13	2041
18	Sun	W.	26 33 38	2332	28 18 51	2337	30 3 57	2342	31 48 55	2346
	Pollux	E.	56 34 36	2043	54 42 9	2048	52 49 49	2053	50 57 37	2058
	Regulus	E.	93 12 5	2052	91 19 52	2057	89 27 46	2062	87 35 48	2068
19	Sun	W.	40 31 19	2387	42 15 12	2396	43 58 52	2407	45 42 17	2417
	Pollux	E.	41 39 6	2096	39 48 1	2105	37 57 9	2115	36 6 32	2125
	Regulus	E.	78 18 27	2105	76 27 35	2114	74 36 57	2123	72 46 33	2134
	Saturn	E.	117 36 9	2073	115 44 29	2082	113 53 2	2091	112 1 49	2101
20	Sun	W.	54 15 25	2477	55 57 11	2490	57 38 38	2503	59 19 47	2517
	Regulus	E.	63 38 40	2191	61 49 59	2204	60 1 37	2216	58 13 34	2230
	Saturn	E.	102 49 47	2157	101 0 14	2169	99 11 0	2181	97 22 4	2194
	Spica	E.	117 40 44	2182	115 51 50	2194	114 3 14	2206	112 14 56	2219
21	Sun	W.	67 40 39	2589	69 19 49	2604	70 58 39	2619	72 37 8	2634
	Aldebaran	W.	32 33 59	2457	34 16 13	2455	35 58 29	2457	37 40 43	2460
	Mars	W.	24 0 47	2512	25 41 44	2523	27 22 25	2535	29 2 49	2548
	Regulus	E.	49 18 27	2302	47 32 30	2317	45 46 55	2332	44 1 42	2348
	Saturn	E.	88 22 19	2261	86 35 22	2275	84 48 46	2289	83 2 31	2303
	Spica	E.	103 18 17	2286	101 31 57	2300	99 45 58	2314	98 0 19	2328
22	Sun	W.	80 44 25	2711	82 20 50	2726	83 56 55	2742	85 32 39	2757
	Aldebaran	W.	46 10 15	2492	47 51 39	2503	49 32 49	2512	51 13 46	2522
	Mars	W.	37 20 19	2616	38 58 52	2631	40 37 5	2645	42 14 59	2659
	Regulus	E.	35 21 26	2430	33 38 34	2448	31 56 8	2467	30 14 8	2486
	Saturn	E.	74 16 24	2375	72 32 13	2389	70 48 23	2403	69 4 53	2418
	Spica	E.	89 17 12	2400	87 33 37	2414	85 50 22	2429	84 7 28	2443

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
10	Spica	W.	106° 12′ 8″	2751	107° 47′ 40″	2735	109° 23′ 34″	2719	110° 59′ 49″	2701
	Antares	W.	60 19 8	2747	61 54 45	2730	63 30 43	2714	65 7 4	2696
	α Pegasi	E.	49 4 45	3407	47 42 36	3425	46 20 48	3446	44 59 24	3472
	Sun	E.	72 33 49	3092	71 5 30	3074	69 36 49	3056	68 7 46	3039
11	Spica	W.	119 6 48	2615	120 45 23	2597	122 24 22	2579	124 3 46	2561
	Antares	W.	73 14 34	2610	74 53 16	2592	76 32 22	2574	78 11 53	2556
	Sun	E.	60 36 46	2943	59 5 22	2924	57 33 34	2905	56 1 21	2884
12	Antares	W.	86 35 51	2463	88 17 56	2445	90 0 26	2427	91 43 22	2409
	α Aquilæ	W.	47 24 59	4369	48 30 48	4250	49 38 27	4140	50 47 50	4037
	Sun	E.	48 13 52	2785	46 39 5	2766	45 3 52	2746	43 28 13	2726
13	Antares	W.	100 24 28	2321	102 9 57	2304	103 55 51	2287	105 42 9	2270
	α Aquilæ	W.	56 57 55	3696	58 16 1	3559	59 35 20	3497	60 55 47	3440
	Sun	E.	35 23 33	2632	33 45 21	2613	32 6 44	2596	30 27 43	2578
14	Antares	W.	114 39 33	2196	116 28 8	2181	118 17 4	2168	120 6 20	2155
	α Aquilæ	W.	67 53 4	3204	69 19 9	3166	70 45 59	3130	72 13 32	3098
	Sun	E.	22 6 45	2496	20 25 26	2482	18 43 47	2467	17 1 48	2453
17	Sun	W.	19 32 0	2321	21 17 29	2322	23 2 56	2325	24 48 19	2326
	Pollux	E.	64 5 14	2032	62 12 29	2033	60 19 47	2036	58 27 9	2039
	Regulus	E.	100 41 43	2042	98 49 14	2043	96 56 47	2046	95 4 24	2048
18	Sun	W.	33 33 45	2355	35 18 25	2362	37 2 55	2370	38 47 13	2378
	Pollux	E.	49 5 33	2064	47 13 39	2072	45 21 56	2079	43 30 25	2087
	Regulus	E.	85 43 59	2073	83 52 19	2081	82 0 50	2088	80 9 32	2096
19	Sun	W.	47 25 27	2426	49 8 22	2440	50 51 0	2452	52 33 21	2464
	Pollux	E.	34 16 11	2136	32 26 7	2147	30 36 19	2159	28 46 49	2170
	Regulus	E.	70 56 25	2144	69 6 33	2155	67 16 58	2167	65 27 40	2178
	Saturn	E.	110 10 52	2112	108 20 11	2122	106 29 46	2134	104 39 38	2145
20	Sun	W.	61 0 37	2531	62 41 7	2545	64 21 18	2559	66 1 9	2574
	Regulus	E.	56 25 51	2244	54 38 29	2258	52 51 27	2272	51 4 46	2287
	Saturn	E.	95 33 28	2207	93 45 11	2220	91 57 14	2233	90 9 36	2247
	Spica	E.	110 26 57	2232	108 39 17	2245	106 51 57	2259	105 4 57	2272
21	Sun	W.	74 15 17	2649	75 53 5	2665	77 30 32	2680	79 7 39	2695
	Aldebaran	W.	39 22 53	2464	41 4 57	2470	42 46 53	2477	44 28 39	2484
	Mars	W.	30 42 56	2561	32 22 45	2574	34 2 15	2588	35 41 27	2602
	Regulus	E.	42 16 52	2364	40 32 25	2380	38 48 22	2396	37 4 42	2413
	Saturn	E.	81 16 36	2317	79 31 2	2331	77 45 48	2346	76 0 56	2360
	Spica	E.	96 15 0	2342	94 30 2	2357	92 45 25	2371	91 1 8	2385
22	Sun	W.	87 8 3	2773	88 43 6	2788	90 17 50	2803	91 52 14	2818
	Aldebaran	W.	52 54 28	2533	54 34 56	2543	56 15 9	2555	57 55 6	2566
	Mars	W.	43 52 34	2673	45 29 50	2688	47 6 46	2702	48 43 23	2716
	Regulus	E.	28 32 35	2506	26 51 30	2527	25 10 54	2548	23 30 48	2571
	Saturn	E.	67 21 44	2432	65 38 55	2446	63 56 26	2460	62 14 17	2474
	Spica	E.	82 24 54	2458	80 42 41	2471	79 0 47	2485	77 19 13	2499

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Sun	W.	93° 26′ 18″	2833	95° 0′ 3″	2848	96° 33′ 28″	2862	98° 6′ 35″	2877
	Aldebaran	W.	59 34 48	2577	61 14 14	2589	62 53 24	2601	64 32 18	2612
	Mars	W.	50 19 41	2731	51 55 40	2745	53 31 20	2759	55 6 42	2773
	Saturn	E.	60 32 27	2488	58 50 57	2502	57 9 46	2516	55 28 55	2529
	Spica	E.	75 37 59	2513	73 57 4	2527	72 16 29	2541	70 36 13	2555
24	Sun	W.	105 47 33	2948	107 18 51	2961	108 49 53	2974	110 20 38	2988
	Aldebaran	W.	72 42 50	2671	74 20 9	2683	75 57 12	2695	77 33 59	2706
	Mars	W.	62 59 0	2841	64 32 35	2853	66 5 54	2866	67 38 56	2879
	Pollux	W.	28 31 27	2621	30 9 54	2632	31 48 5	2645	33 25 59	2656
	Saturn	E.	47 9 14	2594	45 30 11	2607	43 51 26	2619	42 12 57	2632
	Spica	E.	62 19 31	2621	60 41 4	2634	59 2 55	2646	57 25 3	2658
	Antares	E.	108 11 55	2616	106 33 22	2629	104 55 6	2640	103 17 6	2653
25	Sun	W.	117 50 20	3051	119 19 30	3062	120 48 26	3074	122 17 7	3085
	Aldebaran	W.	85 34 9	2762	87 9 27	2772	88 44 31	2784	90 19 20	2794
	Mars	W.	75 20 7	2940	76 51 35	2951	78 22 49	2962	79 53 49	2973
	Pollux	W.	41 31 39	2713	43 8 2	2724	44 44 10	2735	46 20 4	2744
	Saturn	E.	34 4 37	2690	32 27 44	2701	30 51 5	2711	29 14 40	2722
	Spica	E.	49 19 47	2718	47 43 31	2729	46 7 30	2741	44 31 44	2752
	Antares	E.	95 11 9	2710	93 34 43	2722	91 58 32	2733	90 22 35	2744
26	Sun	W.	129 37 10	3139	131 4 32	3150	132 31 41	3160	133 58 38	3169
	Aldebaran	W.	98 10 4	2845	99 43 33	2855	101 16 50	2865	102 49 54	2875
	Mars	W.	87 25 25	3026	88 55 6	3036	90 24 34	3046	91 53 50	3056
	Pollux	W.	54 16 15	2794	55 50 51	2804	57 25 14	2812	58 59 26	2821
	Spica	E.	36 36 31	2805	35 2 10	2816	33 28 3	2826	31 54 9	2837
	Antares	E.	82 26 17	2793	80 51 40	2802	79 17 15	2812	77 43 3	2821
27	Aldebaran	W.	110 32 9	2922	112 4 0	2931	113 35 40	2940	115 7 8	2949
	Mars	W.	99 17 19	3100	100 45 29	3109	102 13 28	3117	103 41 17	3125
	Pollux	W.	66 47 34	2863	68 20 40	2872	69 53 35	2880	71 26 20	2887
	Regulus	W.	30 23 48	2904	31 56 2	2909	33 28 9	2914	35 0 10	2919
	Antares	E.	69 54 50	2863	68 21 44	2871	66 48 48	2879	65 16 2	2887
28	Mars	W.	110 57 59	3163	112 24 52	3170	113 51 37	3178	115 18 13	3184
	Pollux	W.	79 7 47	2922	80 39 38	2929	82 11 20	2935	83 42 54	2942
	Regulus	W.	42 38 40	2945	44 10 2	2950	45 41 17	2955	47 12 26	2961
	Antares	E.	57 34 34	2922	56 2 43	2929	54 31 1	2935	52 59 27	2942
	α Aquilæ	E.	105 54 26	3844	104 40 9	3838	103 25 46	3833	102 11 18	3828
29	Pollux	W.	91 18 48	2972	92 49 36	2977	94 20 18	2982	95 50 53	2987
	Regulus	W.	54 46 30	2986	56 17 0	2992	57 47 23	2997	59 17 40	3001
	Saturn	W.	15 59 53	2953	17 31 5	2958	19 2 10	2963	20 33 9	2968
	Antares	E.	45 23 35	2972	43 52 47	2977	42 22 6	2983	40 51 32	2989
	α Aquilæ	E.	95 58 14	3823	94 43 36	3825	93 29 0	3828	92 14 27	3831
30	Pollux	W.	103 22 14	3012	104 52 12	3016	106 22 5	3020	107 51 53	3025
	Regulus	W.	66 47 41	3023	68 17 25	3028	69 47 3	3032	71 16 36	3035
	Saturn	W.	28 6 35	2991	29 36 59	2995	31 7 18	2999	32 37 32	3004
	Antares	E.	33 20 20	3014	31 50 24	3018	30 20 34	3022	28 50 49	3027
	α Aquilæ	E.	86 2 50	3861	84 48 51	3869	83 35 0	3879	82 21 19	3889

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
23	Sun	W.	99 39 23	2891	101 11 53	2906	102 44 4	2920	104 15 57	2934
	Aldebaran	W.	66 10 57	2624	67 49 19	2636	69 27 25	2648	71 5 15	2659
	Mars	W.	56 41 45	2787	58 16 30	2800	59 50 58	2814	61 25 8	2828
	Saturn	E.	53 48 22	2543	52 8 8	2556	50 28 12	2569	48 48 34	2582
	Spica	E.	68 56 16	2568	67 16 37	2582	65 37 17	2595	63 58 15	2608
24	Sun	W.	111 51 6	3001	113 21 18	3014	114 51 14	3026	116 20 55	3039
	Aldebaran	W.	79 10 31	2717	80 46 48	2729	82 22 50	2740	83 58 37	2751
	Mars	W.	69 11 42	2892	70 44 11	2904	72 16 25	2916	73 48 24	2928
	Pollux	W.	35 3 38	2668	36 41 1	2679	38 18 9	2690	39 55 2	2702
	Saturn	E.	40 34 45	2644	38 56 50	2655	37 19 10	2667	35 41 46	2678
	Spica	E.	55 47 27	2671	54 10 8	2683	52 33 5	2695	50 56 18	2707
	Antares	E.	101 39 23	2665	100 1 56	2677	98 24 45	2688	96 47 49	2700
25	Sun	W.	123 45 35	3096	125 13 49	3108	126 41 49	3119	128 9 36	3129
	Aldebaran	W.	91 53 56	2805	93 28 18	2815	95 2 27	2825	96 36 22	2835
	Mars	W.	81 24 35	2985	82 55 7	2995	84 25 26	3005	85 55 32	3016
	Pollux	W.	47 55 45	2755	49 31 12	2765	51 6 26	2775	52 41 27	2785
	Saturn	E.	27 38 30	2733	26 2 34	2743	24 26 51	2753	22 51 22	2764
	Spica	E.	42 56 13	2763	41 20 56	2774	39 45 54	2785	38 11 6	2795
	Antares	E.	88 46 53	2753	87 11 24	2764	85 36 9	2774	84 1 7	2783
26	Sun	W.	135 25 24	3179	136 51 58	3188	138 18 21	3198	139 44 32	3207
	Aldebaran	W.	104 22 45	2884	105 55 24	2894	107 27 51	2903	109 0 6	2912
	Mars	W.	93 22 54	3065	94 51 47	3074	96 20 28	3082	97 48 59	3091
	Pollux	W.	60 33 26	2830	62 7 15	2839	63 40 52	2848	65 14 18	2855
	Spica	E.	30 20 29	2848	28 47 3	2859	27 13 51	2869	25 40 52	2880
	Antares	E.	76 9 2	2829	74 35 12	2838	73 1 34	2847	71 28 7	2855
27	Aldebaran	W.	116 38 25	2958	118 9 30	2967	119 40 24	2977	121 11 6	2986
	Mars	W.	105 8 56	3133	106 36 26	3141	108 3 46	3148	109 30 57	3156
	Pollux	W.	72 58 56	2894	74 31 23	2901	76 3 40	2909	77 35 48	2916
	Regulus	W.	36 32 5	2924	38 3 54	2929	39 35 36	2935	41 7 11	2939
	Antares	E.	63 43 26	2894	62 10 59	2901	60 38 42	2909	59 6 34	2915
28	Mars	W.	116 44 41	3191	118 11 1	3198	119 37 13	3204	121 3 17	3210
	Pollux	W.	85 14 20	2948	86 45 38	2954	88 16 49	2960	89 47 52	2965
	Regulus	W.	48 43 28	2966	50 14 23	2971	51 45 12	2977	53 15 54	2981
	Antares	E.	51 28 1	2948	49 56 43	2954	48 25 33	2960	46 54 30	2966
	α Aquilæ	E.	100 56 45	3895	99 42 9	3894	98 27 32	3892	97 12 53	3892
29	Pollux	W.	97 21 22	2993	98 51 44	2997	100 22 0	3002	101 52 10	3007
	Regulus	W.	60 47 52	3005	62 17 58	3010	63 47 58	3015	65 17 52	3019
	Saturn	W.	22 4 2	2973	23 34 49	2977	25 5 30	2982	26 36 5	2986
	Antares	E.	39 21 5	2993	37 50 44	2999	36 20 30	3004	34 50 22	3009
	α Aquilæ	E.	90 59 57	3836	89 45 31	3841	88 31 11	3847	87 16 57	3854
30	Pollux	W.	109 21 35	3029	110 51 12	3033	112 20 44	3036	113 50 12	3040
	Regulus	W.	72 46 5	3039	74 15 29	3043	75 44 48	3047	77 14 3	3050
	Saturn	W.	34 7 40	3008	35 37 43	3011	37 7 42	3015	38 37 36	3018
	Antares	E.	27 21 10	3032	25 51 37	3036	24 22 9	3041	22 52 47	3045
	α Aquilæ	E.	81 7 48	3901	79 54 29	3913	78 41 22	3925	77 28 28	3939

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	2 35 28.53	9.549	N.15 13 52.6	+45.04	15 54.20	66.11	3 3.91	0.306
Tues.	2	2 39 17.99	9.572	15 31 46.0	44.41	15 53.96	66.19	3 11.00	0.284
Wed.	3	2 43 8.00	9.596	15 49 24.2	43.76	15 53.73	66.27	3 17.52	0.260
Thur.	4	2 46 58.58	9.619	16 6 46.7	+43.11	15 53.50	66.35	3 23.49	0.237
Frid.	5	2 50 49.72	9.643	16 23 53.3	42.44	15 53.27	66.43	3 28.89	0.213
Sat.	6	2 54 41.45	9.667	16 40 43.7	41.76	15 53.04	66.51	3 33.70	0.188
SUN.	7	2 58 33.76	9.692	16 57 17.7	+41.06	15 52.81	66.59	3 37.93	0.164
Mon.	8	3 2 26.66	9.717	17 13 34.8	40.36	15 52.58	66.67	3 41.57	0.139
Tues.	9	3 6 20.16	9.742	17 29 34.8	39.64	15 52.36	66.75	3 44.62	0.115
Wed.	10	3 10 14.25	9.766	17 45 17.4	+38.90	15 52.14	66.83	3 47.08	0.090
Thur.	11	3 14 8.93	9.791	18 0 42.2	38.16	15 51.93	66.91	3 48.96	0.066
Frid.	12	3 18 4.21	9.815	18 15 49.1	37.40	15 51.72	67.00	3 50.23	0.041
Sat.	13	3 22 0.07	9.840	18 30 37.6	+36.63	15 51.51	67.08	3 50.93	0.017
SUN.	14	3 25 56.52	9.864	18 45 7.4	35.85	15 51.30	67.16	3 51.03	0.008
Mon.	15	3 29 53.55	9.888	18 59 18.3	35.05	15 51.11	67.24	3 50.56	0.031
Tues.	16	3 33 51.15	9.912	19 13 10.0	+34.25	15 50.91	67.32	3 49.52	0.055
Wed.	17	3 37 49.31	9.935	19 26 42.1	33.42	15 50.72	67.40	3 47.92	0.078
Thur.	18	3 41 48.03	9.958	19 39 54.4	32.59	15 50.54	67.48	3 45.77	0.101
Frid.	19	3 45 47.28	9.980	19 52 46.5	+31.75	15 50.36	67.56	3 43.08	0.123
Sat.	20	3 49 47.08	10.002	20 5 18.3	30.90	15 50.18	67.63	3 39.85	0.145
SUN.	21	3 53 47.40	10.024	20 17 29.5	30.03	15 50.01	67.71	3 36.10	0.167
Mon.	22	3 57 48.24	10.045	20 29 19.7	+29.15	15 49.84	67.78	3 31.82	0.189
Tues.	23	4 1 49.58	10.066	20 40 48.9	28.27	15 49.68	67.86	3 27.05	0.209
Wed.	24	4 5 51.42	10.087	20 51 56.7	27.38	15 49.52	67.93	3 21.78	0.230
Thur.	25	4 9 53.75	10.107	21 2 42.9	+26.47	15 49.36	68.00	3 16.03	0.250
Frid.	26	4 13 56.56	10.127	21 13 7.4	25.56	15 49.20	68.07	3 9.80	0.269
Sat.	27	4 17 59.82	10.146	21 23 9.8	24.64	15 49.05	68.13	3 3.11	0.289
SUN.	28	4 22 3.56	10.165	21 32 50.1	+23.71	15 48.90	68.20	2 55.95	0.307
Mon.	29	4 26 7.73	10.183	21 42 8.1	22.78	15 48.76	68.26	2 48.36	0.325
Tues.	30	4 30 12.34	10.201	21 51 3.4	21.83	15 48.61	68.32	2 40.33	0.344
Wed.	31	4 34 17.38	10.219	21 59 36.1	20.89	15 48.47	68.38	2 31.87	0.361
Thur.	32	4 38 22.83	10.236	N. 22 7 45.9	+19.93	15 48.33	68.44	2 23.00	0.378

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^{s}.18$ from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	2 35 29.02	9.550	N. 15 13 54.9	+45.04	3 3.93	0.306	2 38 32.95
Tues.	2	2 39 18.50	9.573	15 31 48.4	44.41	3 11.01	0.283	2 42 29.51
Wed.	3	2 43 8.53	9.596	15 49 26.6	43.77	3 17.53	0.260	2 46 26.06
Thur.	4	2 46 59.12	9.620	16 6 49.2	+43.11	3 23.50	0.237	2 50 22.62
Frid.	5	2 50 50.28	9.644	16 23 55.8	42.44	3 28.90	0.213	2 54 19.18
Sat.	6	2 54 42.02	9.668	16 40 46.2	41.76	3 33.71	0.188	2 58 15.73
SUN.	7	2 58 34.35	9.692	16 57 20.2	+41.06	3 37.94	0.164	3 2 12.29
Mon.	8	3 2 27.26	9.717	17 13 37.3	40.36	3 41.58	0.139	3 6 8.84
Tues.	9	3 6 20.77	9.742	17 29 37.3	39.64	3 44.63	0.115	3 10 5.40
Wed.	10	3 10 14.87	9.766	17 45 19.9	+38.90	3 47.09	0.090	3 14 1.96
Thur.	11	3 14 9.55	9.791	18 0 44.7	38.16	3 48.96	0.065	3 17 58.51
Frid.	12	3 18 4.84	9.816	18 15 51.5	37.40	3 50.23	0.041	3 21 55.07
Sat.	13	3 22 0.70	9.840	18 30 39.9	+36.63	3 50.93	0.017	3 25 51.63
SUN.	14	3 25 57.15	9.864	18 45 9.8	35.85	3 51.03	0.008	3 29 48.18
Mon.	15	3 29 54.18	9.888	18 59 20.6	35.05	3 50.56	0.031	3 33 44.74
Tues.	16	3 33 51.78	9.912	19 13 12.2	+34.24	3 49.52	0.055	3 37 41.30
Wed.	17	3 37 49.94	9.935	19 26 44.2	33.44	3 47.92	0.078	3 41 37.86
Thur.	18	3 41 48.65	9.958	19 39 56.4	32.59	3 45.76	0.101	3 45 34.41
Frid.	19	3 45 47.90	9.980	19 52 48.5	+31.75	3 43.07	0.123	3 49 30.97
Sat.	20	3 49 47.69	10.002	20 5 20.2	30.89	3 39.84	0.145	3 53 27.53
SUN.	21	3 53 48.00	10.024	20 17 31.3	30.03	3 36.09	0.167	3 57 24.09
Mon.	22	3 57 48.83	10.045	20 29 21.5	+29.15	3 31.81	0.189	4 1 20.64
Tues.	23	4 1 50.16	10.066	20 40 50.6	28.26	3 27.04	0.209	4 5 17.20
Wed.	24	4 5 51.99	10.086	20 51 58.3	27.37	3 21.77	0.230	4 9 13.76
Thur.	25	4 9 54.30	10.106	21 2 44.4	+26.47	3 16.02	0.250	4 13 10.32
Frid.	26	4 13 57.09	10.126	21 13 8.8	25.56	3 9.78	0.269	4 17 6.87
Sat.	27	4 18 0.34	10.145	21 23 11.1	24.64	3 3.09	0.289	4 21 3.43
SUN.	28	4 22 4.06	10.164	21 32 51.3	+23.71	2 55.93	0.307	4 24 59.99
Mon.	29	4 26 8.21	10.182	21 42 9.2	22.77	2 48.34	0.325	4 28 56.55
Tues.	30	4 30 12.80	10.200	21 51 4.4	21.83	2 40.31	0.344	4 32 53.11
Wed.	31	4 34 17.81	10.218	21 59 37.0	20.88	2 31.85	0.361	4 36 49.66
Thur.	32	4 38 23.24	10.235	N. 22 7 46.7	+19.92	2 22.98	0.378	4 40 46.22

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour, $+9^{s}.8565$. (Table III.)

Day of the Month.	Day of the Year.	AT GREENWICH MEAN NOON.						Mean Time of Sidereal Noon.
		THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	121	41 18 36.8	18 29.3	145.38	− 0.17	0.0035355	+44.8	21 17 57.11
2	122	42 16 45.0	16 37.4	145.31	0.29	0.0036428	44.6	21 14 1.20
3	123	43 14 51.6	14 43.8	145.24	0.39	0.0037496	44.4	21 10 5.30
4	124	44 12 56.6	12 48.7	145.18	− 0.47	0.0038558	+44.1	21 6 9.38
5	125	45 11 0.1	10 52.0	145.12	0.53	0.0039613	43.8	21 2 13.47
6	126	46 9 2.3	8 54.1	145.06	0.57	0.0040659	43.4	20 58 17.56
7	127	47 7 3.0	6 54.6	145.00	− 0.57	0.0041696	+43.0	20 54 21.65
8	128	48 5 2.4	4 53.9	144.95	0.53	0.0042722	42.5	20 50 25.75
9	129	49 3 0.5	2 51.8	144.89	0.47	0.0043735	41.9	20 46 29.83
10	130	50 0 57.3	0 48.5	144.84	− 0.39	0.0044733	+41.2	20 42 33.92
11	131	50 58 52.9	58 43.9	144.79	0.28	0.0045715	40.6	20 38 38.01
12	132	51 56 47.2	56 38.0	144.73	0.15	0.0046680	39.8	20 34 42.10
13	133	52 54 40.1	54 30.8	144.68	− 0.01	0.0047627	+39.1	20 30 46.19
14	134	53 52 31.7	52 22.2	144.62	+ 0.13	0.0048555	38.2	20 26 50.28
15	135	54 50 22.0	50 12.4	144.56	0.26	0.0049462	37.4	20 22 54.37
16	136	55 48 10.8	48 1.0	144.50	+ 0.37	0.0050348	+36.5	20 18 58.45
17	137	56 45 58.1	45 48.1	144.44	0.46	0.0051213	35.6	20 15 2.54
18	138	57 43 43.9	43 33.7	144.38	0.53	0.0052057	34.8	20 11 6.63
19	139	58 41 28.2	41 17.9	144.31	+ 0.58	0.0052882	+34.0	20 7 10.72
20	140	59 39 11.0	39 0.5	144.25	0.60	0.0053688	33.2	20 3 14.81
21	141	60 36 52.3	36 41.6	144.19	0.59	0.0054475	32.4	19 59 18.89
22	142	61 34 32.0	34 21.2	144.12	+ 0.55	0.0055243	+31.6	19 55 22.99
23	143	62 32 10.2	31 59.2	144.06	0.48	0.0055993	30.9	19 51 27.08
24	144	63 29 46.9	29 35.7	144.00	0.38	0.0056727	30.3	19 47 31.16
25	145	64 27 22.1	27 10.7	143.94	+ 0.26	0.0057447	+29.7	19 43 35.25
26	146	65 24 55.9	24 44.3	143.88	+ 0.13	0.0058154	29.2	19 39 39.34
27	147	66 22 28.4	22 16.7	143.83	0.00	0.0058848	28.6	19 35 43.43
28	148	67 19 59.6	19 47.7	143.77	− 0.12	0.0059529	+ 28.1	19 31 47.51
29	149	68 17 29.5	17 17.4	143.72	0.24	0.0060198	27.6	19 27 51.60
30	150	69 14 58.3	14 46.0	143.68	0.35	0.0060856	27.2	19 23 55.69
31	151	70 12 26.0	12 13.6	143.64	0.44	0.0061503	26.8	19 19 59.78
32	152	71 9 52.8	9 40.2	143.60	− 0.50	0.0062138	+ 26.2	19 16 3.87

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^{d}.0$.

Diff. for 1 Hour,
$-9^{s}.8296$.
(Table II.)

GREENWICH MEAN TIME

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 47.0	14 45.8	54 8.4	−0.40	54 4.2	−0.30	12 40.7	1.89	14.9
2	14 45.1	14 44.7	54 1.4	−0.18	54 0.0	−0.06	13 27.3	1.99	15.9
3	14 44.7	14 45.1	54 0.0	+0.07	54 1.7	+0.21	14 16.4	2.09	16.9
4	14 46.1	14 47.5	54 5.1	+0.36	54 10.4	+0.52	15 7.4	2.15	17.9
5	14 49.4	14 51.9	54 17.5	0.68	54 26.7	0.86	15 59.3	2.17	18.9
6	14 55.0	14 58.7	54 38.0	1.03	54 51.4	1.21	16 51.0	2.13	19.9
7	15 2.9	15 7.8	55 7.1	+1.40	55 24.9	+1.58	17 41.5	2.07	20.9
8	15 13.2	15 19.2	55 44.9	1.76	56 7.0	1.92	18 30.3	2.00	21.9
9	15 25.8	15 32.8	56 31.0	2.07	56 56.6	2.20	19 17.7	1.95	22.9
10	15 40.1	15 47.8	57 23.7	+2.30	57 51.8	+2.36	20 4.3	1.94	23.9
11	15 55.6	16 3.4	58 20.4	2.39	58 49.0	2.37	20 51.2	1.98	24.9
12	16 11.0	16 18.3	59 17.1	2.29	59 43.8	2.15	21 39.6	2.07	25.9
13	16 25.0	16 31.0	60 8.6	+1.96	60 30.7	+1.70	22 31.1	2.22	26.9
14	16 36.1	16 40.1	60 49.3	1.39	61 4.1	1.05	23 26.8	2.42	27.9
15	16 42.9	16 44.4	61 14.3	+0.65	61 19.7	+0.24	δ		28.9
16	16 44.5	16 43.2	61 20.0	−0.18	61 15.5	−0.58	0 27.5	2.62	0.6
17	16 40.7	16 37.0	61 6.1	0.96	60 52.4	1.30	1 32.4	2.76	1.6
18	16 32.2	16 26.5	60 34.9	1.61	60 13.9	1.86	2 38.9	2.75	2.6
19	16 20.1	16 13.2	59 50.4	−2.04	59 25.0	−2.17	3 43.4	2.60	3.6
20	16 5.9	15 58.5	58 58.4	2.25	58 31.1	2.28	4 43.3	2.38	4.6
21	15 51.0	15 43.8	58 3.8	2.25	57 37.1	2.20	5 37.4	2.14	5.6
22	15 36.7	15 30.0	57 11.1	−2.11	56 46.4	−2.00	6 26.2	1.94	6.6
23	15 23.6	15 17.7	56 23.1	1.88	56 1.4	1.74	7 10.8	1.79	7.6
24	15 12.3	15 7.4	55 41.5	1.59	55 23.4	1.43	7 52.8	1.71	8.6
25	15 3.0	14 59.0	55 7.2	−1.28	54 52.8	−1.12	8 33.4	1.68	9.6
26	14 55.6	14 52.7	54 40.3	0.97	54 29.5	0.83	9 13.8	1.70	10.6
27	14 50.2	14 48.2	54 20.4	0.69	54 13.0	0.56	9 55.3	1.76	11.6
28	14 46.6	14 45.4	54 7.0	−0.44	54 2.6	−0.31	10 38.5	1.85	12.6
29	14 44.6	14 44.1	53 59.6	−0.20	53 57.9	−0.09	11 24.2	1.96	13.6
30	14 44.0	14 44.3	53 57.6	+0.02	53 58.9	+0.13	12 12.6	2.06	14.6
31	14 44.9	14 45.8	54 1.1	0.25	54 4.8	0.37	13 3.1	2.14	15.6
32	14 47.4	14 49.2	54 10.0	+0.49	54 16.5	+0.61	13 54.9	2.17	16.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 56 19.87	1.9474	S. 18 31 35.9	10.981
1	14 58 16.82	1.9511	18 42 32.4	10.903
2	15 0 14.00	1.9548	18 53 24.3	10.825
3	15 2 11.40	1.9586	19 4 11.4	10.744
4	15 4 9.03	1.9623	19 14 53.6	10.663
5	15 6 6.88	1.9661	19 25 31.0	10.582
6	15 8 4.96	1.9699	19 36 3.5	10.500
7	15 10 3.27	1.9737	19 46 31.0	10.417
8	15 12 1.81	1.9775	19 56 53.5	10.332
9	15 14 0.57	1.9814	20 7 10.9	10.247
10	15 15 59.57	1.9853	20 17 23.2	10.162
11	15 17 58.81	1.9892	20 27 30.3	10.075
12	15 19 58.28	1.9932	20 37 32.2	9.987
13	15 21 57.99	1.9972	20 47 28.8	9.899
14	15 23 57.94	2.0011	20 57 20.1	9.810
15	15 25 58.12	2.0050	21 7 6.0	9.720
16	15 27 58.54	2.0090	21 16 46.5	9.629
17	15 29 59.20	2.0130	21 26 21.5	9.537
18	15 32 0.10	2.0170	21 35 51.0	9.445
19	15 34 1.24	2.0210	21 45 14.9	9.352
20	15 36 2.62	2.0251	21 54 33.1	9.257
21	15 38 4.25	2.0292	22 3 45.7	9.162
22	15 40 6.12	2.0332	22 12 52.6	9.067
23	15 42 8.23	2.0372	S. 22 21 53.7	8.969

TUESDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 44 10.59	2.0413	S. 22 30 48.9	8.871
1	15 46 13.19	2.0453	22 39 38.2	8.773
2	15 48 16.03	2.0493	22 48 21.7	8.675
3	15 50 19.11	2.0533	22 56 59.2	8.574
4	15 52 22.43	2.0574	23 5 30.6	8.473
5	15 54 26.00	2.0615	23 13 55.9	8.372
6	15 56 29.81	2.0655	23 22 15.2	8.270
7	15 58 33.86	2.0695	23 30 28.3	8.166
8	16 0 38.15	2.0736	23 38 35.1	8.062
9	16 2 42.69	2.0776	23 46 35.7	7.957
10	16 4 47.47	2.0816	23 54 29.9	7.851
11	16 6 52.48	2.0855	24 2 17.8	7.745
12	16 8 57.73	2.0895	24 9 59.3	7.638
13	16 11 3.22	2.0935	24 17 34.4	7.530
14	16 13 8.95	2.0975	24 25 2.9	7.421
15	16 15 14.92	2.1014	24 32 24.9	7.312
16	16 17 21.12	2.1053	24 39 40.3	7.201
17	16 19 27.55	2.1092	24 46 49.0	7.090
18	16 21 34.22	2.1131	24 53 51.1	6.979
19	16 23 41.12	2.1169	25 0 46.5	6.867
20	16 25 48.25	2.1207	25 7 35.1	6.753
21	16 27 55.60	2.1244	25 14 16.8	6.638
22	16 30 3.18	2.1282	25 20 51.7	6.524
23	16 32 10.99	2.1320	25 27 19.7	6.409
24	16 34 19.02	2.1357	S. 25 33 40.8	6.293

WEDNESDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 34 19.02	2.1357	S. 25 33 40.8	6.293
1	16 36 27.27	2.1393	25 39 54.9	6.176
2	16 38 35.74	2.1430	25 46 1.9	6.059
3	16 40 44.43	2.1466	25 52 1.9	5.941
4	16 42 53.33	2.1501	25 57 54.8	5.822
5	16 45 2.44	2.1537	26 3 40.5	5.702
6	16 47 11.77	2.1572	26 9 19.0	5.582
7	16 49 21.31	2.1607	26 14 50.3	5.461
8	16 51 31.05	2.1640	26 20 14.3	5.339
9	16 53 40.99	2.1673	26 25 31.0	5.217
10	16 55 51.13	2.1706	26 30 40.3	5.094
11	16 58 1.47	2.1739	26 35 42.3	4.971
12	17 0 12.00	2.1771	26 40 36.9	4.847
13	17 2 22.72	2.1803	26 45 24.0	4.722
14	17 4 33.63	2.1834	26 50 3.6	4.597
15	17 6 44.73	2.1865	26 54 35.7	4.472
16	17 8 56.01	2.1895	26 59 0.2	4.345
17	17 11 7.47	2.1925	27 3 17.1	4.218
18	17 13 19.11	2.1954	27 7 26.4	4.091
19	17 15 30.92	2.1982	27 11 28.0	3.963
20	17 17 42,90	2.2010	27 15 21.9	3.834
21	17 19 55.04	2.2037	27 19 8.1	3.706
22	17 22 7.35	2.2064	27 22 46.6	3.576
23	17 24 19.81	2.2090	S. 27 26 17.2	3.445

THURSDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 26 32.43	2.2116	S. 27 29 40.0	3.315
1	17 28 45.20	2.2141	27 32 55.0	3.184
2	17 30 58.12	2.2165	27 36 2.1	3.053
3	17 33 11.18	2.2189	27 39 1.3	2.921
4	17 35 24.38	2.2212	27 41 52.6	2.788
5	17 37 37.72	2.2234	27 44 35.9	2.656
6	17 39 51.19	2.2256	27 47 11.3	2.523
7	17 42 4.79	2.2277	27 49 38.7	2.389
8	17 44 18.51	2.2297	27 51 58.0	2.255
9	17 46 32.35	2.2317	27 54 9.3	2.121
10	17 48 46.31	2.2335	27 56 12.5	1.986
11	17 51 0.37	2.2353	27 58 7.6	1.851
12	17 53 14.54	2.2371	27 59 54.6	1.716
13	17 55 28.82	2.2387	28 1 33.5	1.580
14	17 57 43.19	2.2403	28 3 4.2	1.444
15	17 59 57.66	2.2418	28 4 26.8	1.308
16	18 2 12.21	2.2433	28 5 41.2	1.172
17	18 4 26.85	2.2447	28 6 47.4	1.035
18	18 6 41.57	2.2460	28 7 45.4	0.898
19	18 8 56.37	2.2472	28 8 35.1	0.760
20	18 11 11.23	2.2483	28 9 16.6	0.623
21	18 13 26.16	2.2493	28 9 49.9	0.486
22	18 15 41.15	2.2503	28 10 14.9	0.348
23	18 17 56.20	2.2512	28 10 31.6	0.210
24	18 20 11.30	2.2521	S. 28 10 40.1	− 0.072

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 20 11.30	2.2521	S.28 10 40.1	− 0.072
1	18 22 26.45	2.2528	28 10 40.3	+ 0.067
2	18 24 41.64	2.2535	28 10 32.1	0.206
3	18 26 56.87	2.2542	28 10 15.6	0.344
4	18 29 12.14	2.2547	28 9 50.8	0.482
5	18 31 27.43	2.2551	28 9 17.7	0.621
6	18 33 42.75	2.2555	28 8 36.3	0.760
7	18 35 58.09	2.2558	28 7 46.5	0.899
8	18 38 13.44	2.2560	28 6 48.4	1.038
9	18 40 28.81	2.2562	28 5 42.0	1.177
10	18 42 44.19	2.2563	28 4 27.2	1.316
11	18 44 59.57	2.2563	28 3 4.1	1.454
12	18 47 14.94	2.2562	28 1 32.7	1.593
13	18 49 30.31	2.2560	27 59 52.9	1.732
14	18 51 45.66	2.2558	27 58 4.8	1.872
15	18 54 1.00	2.2555	27 56 8.3	2.011
16	18 56 16.32	2.2551	27 54 3.5	2.149
17	18 58 31.61	2.2546	27 51 50.4	2.288
18	19 0 46.87	2.2541	27 49 29.0	2.426
19	19 3 2.10	2.2535	27 46 59.3	2.564
20	19 5 17.29	2.2529	27 44 21.3	2.703
21	19 7 32.44	2.2522	27 41 34.9	2.841
22	19 9 47.55	2.2513	27 38 40.3	2.979
23	19 12 2.60	2.2504	S.27 35 37.4	3.117

SATURDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 14 17.60	2.2495	S.27 32 26.2	3.255
1	19 16 32.54	2.2485	27 29 6.8	3.393
2	19 18 47.42	2.2474	27 25 39.1	3.530
3	19 21 2.23	2.2463	27 22 3.2	3.668
4	19 23 16.97	2.2451	27 18 19.0	3.805
5	19 25 31.64	2.2438	27 14 26.6	3.941
6	19 27 46.23	2.2425	27 10 26.1	4.077
7	19 30 0.74	2.2411	27 6 17.4	4.213
8	19 32 15.16	2.2396	27 2 0.5	4.349
9	19 34 29.49	2.2381	26 57 35.5	4.485
10	19 36 43.73	2.2366	26 53 2.3	4.621
11	19 38 57.88	2.2350	26 48 21.0	4.755
12	19 41 11.93	2.2333	26 43 31.7	4.889
13	19 43 25.88	2.2316	26 38 34.3	5.024
14	19 45 39.72	2.2298	26 33 28.8	5.158
15	19 47 53.45	2.2279	26 28 15.3	5.292
16	19 50 7.07	2.2261	26 22 53.8	5.425
17	19 52 20.58	2.2242	26 17 24.3	5.557
18	19 54 33.98	2.2223	26 11 46.9	5.689
19	19 56 47.26	2.2203	26 6 1.6	5.822
20	19 59 0.41	2.2182	26 0 8.3	5.954
21	20 1 13.44	2.2161	25 54 7.1	6.085
22	20 3 26.34	2.2139	25 47 58.1	6.216
23	20 5 39.11	2.2118	25 41 41.2	6.347
24	20 7 51.75	2.2096	S.25 35 16.5	6.477

SUNDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 7 51.75	2.2096	S.25 35 16.5	6.477
1	20 10 4.26	2.2073	25 28 44.0	6.606
2	20 12 16.63	2.2050	25 22 3.8	6.734
3	20 14 28.86	2.2027	25 15 15.9	6.863
4	20 16 40.95	2.2003	25 8 20.3	6.991
5	20 18 52.90	2.1980	25 1 17.0	7.119
6	20 21 4.71	2.1956	24 54 6.0	7.247
7	20 23 16.37	2.1931	24 46 47.4	7.373
8	20 25 27.88	2.1907	24 39 21.3	7.498
9	20 27 39.25	2.1882	24 31 47.7	7.623
10	20 29 50.47	2.1857	24 24 6.6	7.748
11	20 32 1.54	2.1832	24 16 18.0	7.873
12	20 34 12.45	2.1807	24 8 21.9	7.996
13	20 36 23.21	2.1781	24 0 18.4	8.119
14	20 38 33.82	2.1755	23 52 7.6	8.242
15	20 40 44.27	2.1729	23 43 49.4	8.364
16	20 42 54.57	2.1703	23 35 23.9	8.486
17	20 45 4.71	2.1677	23 26 51.1	8.607
18	20 47 14.69	2.1650	23 18 11.1	8.727
19	20 49 24.51	2.1624	23 9 23.9	8.847
20	20 51 34.18	2.1598	23 0 29.5	8.966
21	20 53 43.69	2.1572	22 51 28.0	9.084
22	20 55 53.04	2.1545	22 42 19.4	9.202
23	20 58 2.23	2.1517	S.22 33 3.8	9.319

MONDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 0 11.25	2.1490	S.22 23 41.1	9.436
1	21 2 20.11	2.1464	22 14 11.4	9.552
2	21 4 28.82	2.1439	22 4 34.8	9.667
3	21 6 37.38	2.1413	21 54 51.4	9.781
4	21 8 45.78	2.1387	21 45 1.1	9.895
5	21 10 54.02	2.1360	21 35 4.0	10.008
6	21 13 2.10	2.1334	21 25 0.1	10.121
7	21 15 10.03	2.1308	21 14 49.5	10.233
8	21 17 17.80	2.1282	21 4 32.2	10.344
9	21 19 25.41	2.1256	20 54 8.2	10.455
10	21 21 32.87	2.1230	20 43 37.6	10.564
11	21 23 40.17	2.1204	20 33 0.5	10.673
12	21 25 47.32	2.1179	20 22 16.8	10.782
13	21 27 54.32	2.1154	20 11 26.6	10.890
14	21 30 1.17	2.1129	20 0 30.0	10.997
15	21 32 7.87	2.1104	19 49 27.0	11.103
16	21 34 14.42	2.1080	19 38 17.6	11.208
17	21 36 20.83	2.1056	19 27 2.0	11.313
18	21 38 27.09	2.1032	19 15 40.1	11.417
19	21 40 33.21	2.1008	19 4 12.0	11.520
20	21 42 39.19	2.0985	18 52 37.7	11.623
21	21 44 45.03	2.0962	18 40 57.2	11.726
22	21 46 50.73	2.0939	18 29 10.6	11.827
23	21 48 56.30	2.0917	18 17 18.0	11.927
24	21 51 1.73	2.0894	S.18 5 19.4	12.027

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 51 1.73	2.0894	S. 18 5 19.4	12.027
1	21 53 7.03	2.0872	17 53 14.8	12.125
2	21 55 12.20	2.0852	17 41 4.4	12.223
3	21 57 17.25	2.0831	17 28 48.1	12.320
4	21 59 22.17	2.0810	17 16 26.0	12.417
5	22 1 26.97	2.0789	17 3 58.1	12.513
6	22 3 31.64	2.0769	16 51 24.5	12.608
7	22 5 36.20	2.0750	16 38 45.2	12.702
8	22 7 40.64	2.0731	16 26 0.3	12.795
9	22 9 44.97	2.0713	16 13 9.8	12.887
10	22 11 49.19	2.0695	16 0 13.8	12.978
11	22 13 53.31	2.0677	15 47 12.4	13.069
12	22 15 57.32	2.0660	15 34 5.5	13.160
13	22 18 1.23	2.0643	15 20 53.2	13.249
14	22 20 5.04	2.0627	15 7 35.6	13.337
15	22 22 8.76	2.0612	14 54 12.8	13.424
16	22 24 12.38	2.0597	14 40 44.8	13.510
17	22 26 15.92	2.0582	14 27 11.6	13.596
18	22 28 19.37	2.0568	14 13 33.2	13.682
19	22 30 22.74	2.0555	13 59 49.8	13.765
20	22 32 26.03	2.0542	13 46 1.4	13.848
21	22 34 29.24	2.0529	13 32 8.0	13.931
22	22 36 32.38	2.0517	13 18 9.7	14.012
23	22 38 35.45	2.0507	S. 13 4 6.6	14.092

WEDNESDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 40 38.46	2.0497	S. 12 49 58.7	14.172
1	22 42 41.41	2.0487	12 35 46.0	14.251
2	22 44 44.30	2.0477	12 21 28.6	14.328
3	22 46 47.13	2.0468	12 7 6.7	14.404
4	22 48 49.92	2.0461	11 52 40.2	14.480
5	22 50 52.66	2.0454	11 38 9.1	14.556
6	22 52 55.36	2.0447	11 23 33.5	14.630
7	22 54 58.02	2.0441	11 8 53.5	14.702
8	22 57 0.65	2.0435	10 54 9.2	14.774
9	22 59 3.24	2.0430	10 39 20.6	14.845
10	23 1 5.81	2.0426	10 24 27.8	14.915
11	23 3 8.36	2.0423	10 9 30.8	14.984
12	23 5 10.89	2.0421	9 54 29.7	15.052
13	23 7 13.41	2.0419	9 39 24.6	15.119
14	23 9 15.92	2.0418	9 24 15.5	15.185
15	23 11 18.43	2.0418	9 9 2.4	15.251
16	23 13 20.94	2.0418	8 53 45.4	15.315
17	23 15 23.45	2.0418	8 38 24.6	15.377
18	23 17 25.96	2.0420	8 23 0.1	15.439
19	23 19 28.49	2.0422	8 7 31.9	15.500
20	23 21 31.03	2.0425	7 52 0.1	15.559
21	23 23 33.59	2.0429	7 36 24.8	15.618
22	23 25 36.18	2.0435	7 20 45.9	15.677
23	23 27 38.81	2.0441	7 5 3.6	15.733
24	23 29 41.47	2.0447	S. 6 49 18.0	15.788

THURSDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 29 41.47	2.0447	S. 6 49 18.0	15.788
1	23 31 44.17	2.0454	6 33 29.1	15.842
2	23 33 46.92	2.0462	6 17 37.0	15.895
3	23 35 49.72	2.0471	6 1 41.7	15.947
4	23 37 52.57	2.0481	5 45 43.3	15.998
5	23 39 55.49	2.0492	5 29 41.9	16.048
6	23 41 58.47	2.0503	5 13 37.6	16.096
7	23 44 1.52	2.0515	4 57 30.4	16.143
8	23 46 4.65	2.0527	4 41 20.4	16.189
9	23 48 7.85	2.0541	4 25 7.7	16.234
10	23 50 11.14	2.0556	4 8 52.3	16.277
11	23 52 14.52	2.0572	3 52 34.4	16.319
12	23 54 18.00	2.0589	3 36 14.0	16.360
13	23 56 21.58	2.0606	3 19 51.2	16.400
14	23 58 25.27	2.0623	3 3 26.0	16.439
15	0 0 29.06	2.0642	2 46 58.5	16.477
16	0 2 32.97	2.0662	2 30 28.8	16.513
17	0 4 37.00	2.0683	2 13 57.0	16.547
18	0 6 41.16	2.0704	1 57 23.2	16.580
19	0 8 45.45	2.0727	1 40 47.4	16.612
20	0 10 49.88	2.0750	1 24 9.7	16.642
21	0 12 54.45	2.0774	1 7 30.3	16.671
22	0 14 59.17	2.0800	0 50 49.2	16.699
23	0 17 4.05	2.0826	S. 0 34 6.4	16.726

FRIDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 19 9.08	2.0853	S. 0 17 22.1	16.751
1	0 21 14.28	2.0881	S. 0 0 36.3	16.774
2	0 23 19.65	2.0909	N. 0 16 10.8	16.795
3	0 25 25.19	2.0938	0 32 59.1	16.815
4	0 27 30.91	2.0969	0 49 48.6	16.835
5	0 29 36.82	2.1001	1 6 39.3	16.853
6	0 31 42.92	2.1033	1 23 31.0	16.869
7	0 33 49.22	2.1067	1 40 23.6	16.883
8	0 35 55.72	2.1101	1 57 17.0	16.896
9	0 38 2.43	2.1136	2 14 11.1	16.907
10	0 40 9.35	2.1172	2 31 5.8	16.916
11	0 42 16.50	2.1210	2 48 1.0	16.924
12	0 44 23.87	2.1248	3 4 56.7	16.931
13	0 46 31.47	2.1287	3 21 52.7	16.935
14	0 48 39.31	2.1326	3 38 48.9	16.938
15	0 50 47.38	2.1366	3 55 45.3	16.940
16	0 52 55.70	2.1408	4 12 41.7	16.940
17	0 55 4.28	2.1451	4 29 38.1	16.938
18	0 57 13.11	2.1494	4 46 34.3	16.934
19	0 59 22.20	2.1538	5 3 30.2	16.928
20	1 1 31.57	2.1584	5 20 25.7	16.922
21	1 3 41.21	2.1630	5 37 20.8	16.913
22	1 5 51.13	2.1677	5 54 15.3	16.902
23	1 8 1.34	2.1725	6 11 9.0	16.888
24	1 10 11.83	2.1773	N. 6 28 1.9	16.874

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 10 11.83	2.1773	N. 6 28 1.9	16.874
1	1 12 22.62	2.1823	6 44 53.9	16.858
2	1 14 33.71	2.1874	7 1 44.9	16.840
3	1 16 45.11	2.1926	7 18 34.7	16.819
4	1 18 56.82	2.1978	7 35 23.2	16.797
5	1 21 8.85	2.2032	7 52 10.3	16.773
6	1 23 21.20	2.2087	8 8 56.0	16.747
7	1 25 33.88	2.2142	8 25 40.0	16.719
8	1 27 46.90	2.2197	8 42 22.3	16.690
9	1 30 0.25	2.2254	8 59 2.8	16.658
10	1 32 13.94	2.2312	9 15 41.3	16.624
11	1 34 27.99	2.2371	9 32 17.7	16.588
12	1 36 42.39	2.2430	9 48 51.9	16.551
13	1 38 57.15	2.2490	10 5 23.8	16.511
14	1 41 12.27	2.2551	10 21 53.2	16.468
15	1 43 27.76	2.2613	10 38 20.0	16.424
16	1 45 43.62	2.2675	10 54 44.1	16.377
17	1 47 59.86	2.2739	11 11 5.3	16.329
18	1 50 16.49	2.2803	11 27 23.6	16.279
19	1 52 33.50	2.2867	11 43 38.8	16.227
20	1 54 50.90	2.2933	11 59 50.8	16.179
21	1 57 8.70	2.3000	12 15 59.4	16.114
22	1 59 26.90	2.3067	12 32 4.5	16.055
23	2 1 45.50	2.3134	N.12 48 6.0	15.993

SUNDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 4 4.51	2.3203	N.13 4 3.7	15.929
1	2 6 23.94	2.3273	13 19 57.5	15.863
2	2 8 43.78	2.3342	13 35 47.3	15.796
3	2 11 4.04	2.3412	13 51 33.0	15.725
4	2 13 24.73	2.3483	14 7 14.3	15.652
5	2 15 45.84	2.3554	14 22 51.2	15.577
6	2 18 7.38	2.3627	14 38 23.6	15.500
7	2 20 29.36	2.3700	14 53 51.2	15.420
8	2 22 51.78	2.3773	15 9 14.0	15.338
9	2 25 14.63	2.3846	15 24 31.8	15.253
10	2 27 37.93	2.3921	15 39 44.4	15.167
11	2 30 1.68	2.3996	15 54 51.8	15.078
12	2 32 25.88	2.4071	16 9 53.8	14.987
13	2 34 50.53	2.4146	16 24 50.2	14.893
14	2 37 15.63	2.4222	16 39 40.9	14.797
15	2 39 41.19	2.4298	16 54 25.8	14.698
16	2 42 7.21	2.4375	17 9 4.7	14.597
17	2 44 33.69	2.4452	17 23 37.4	14.493
18	2 47 0.63	2.4529	17 38 3.9	14.388
19	2 49 28.03	2.4606	17 52 24.0	14.280
20	2 51 55.90	2.4684	18 6 37.5	14.169
21	2 54 24.24	2.4762	18 20 44.3	14.057
22	2 56 53.05	2.4840	18 34 44.3	13.942
23	2 59 22.32	2.4918	18 48 37.3	13.824
24	3 1 52.06	2.4996	N.19 2 23.2	13.704

MONDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 1 52.06	2.4996	N.19 2 23.2	13.704
1	3 4 22.27	2.5074	19 16 1.8	13.582
2	3 6 52.95	2.5152	19 29 33.0	13.457
3	3 9 24.10	2.5230	19 42 56.6	13.329
4	3 11 55.71	2.5308	19 56 12.5	13.200
5	3 14 27.79	2.5386	20 9 20.6	13.068
6	3 17 0.34	2.5463	20 22 20.7	12.933
7	3 19 33.35	2.5541	20 35 12.6	12.797
8	3 22 6.83	2.5618	20 47 56.3	12.658
9	3 24 40.77	2.5695	21 0 31.6	12.517
10	3 27 15.17	2.5772	21 12 58.3	12.373
11	3 29 50.03	2.5848	21 25 16.3	12.228
12	3 32 25.35	2.5924	21 37 25.6	12.080
13	3 35 1.12	2.5999	21 49 25.9	11.929
14	3 37 37.34	2.6074	22 1 17.1	11.776
15	3 40 14.01	2.6148	22 12 59.0	11.621
16	3 42 51.12	2.6222	22 24 31.6	11.464
17	3 45 28.67	2.6295	22 35 54.7	11.304
18	3 48 6.66	2.6367	22 47 8.1	11.142
19	3 50 45.08	2.6439	22 58 11.8	10.979
20	3 53 23.93	2.6510	23 9 5.6	10.813
21	3 56 3.20	2.6580	23 19 49.4	10.646
22	3 58 42.89	2.6649	23 30 23.1	10.476
23	4 1 22.99	2.6717	N.23 40 46.5	10.303

TUESDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 4 3.50	2.6785	N.23 50 59.5	10.129
1	4 6 44.41	2.6851	24 1 2.0	9.953
2	4 9 25.71	2.6916	24 10 53.9	9.776
3	4 12 7.40	2.6980	24 20 35.1	9.596
4	4 14 49.47	2.7043	24 30 5.4	9.414
5	4 17 31.92	2.7105	24 39 24.8	9.231
6	4 20 14.73	2.7165	24 48 33.1	9.045
7	4 22 57.90	2.7224	24 57 30.2	8.857
8	4 25 41.42	2.7282	25 6 16.0	8.669
9	4 28 25.28	2.7338	25 14 50.5	8.479
10	4 31 9.48	2.7393	25 23 13.5	8.287
11	4 33 54.00	2.7447	25 31 24.9	8.093
12	4 36 38.84	2.7498	25 39 24.6	7.897
13	4 39 23.98	2.7548	25 47 12.5	7.700
14	4 42 9.42	2.7597	25 54 48.6	7.502
15	4 44 55.15	2.7644	26 2 12.8	7.302
16	4 47 41.15	2.7689	26 9 24.9	7.101
17	4 50 27.42	2.7732	26 16 24.9	6.899
18	4 53 13.94	2.7773	26 23 12.8	6.696
19	4 56 0.70	2.7813	26 29 48.4	6.490
20	4 58 47.70	2.7850	26 36 11.6	6.283
21	5 1 34.93	2.7886	26 42 22.4	6.076
22	5 4 22.37	2.7920	26 48 20.7	5.868
23	5 7 10.00	2.7954	26 54 6.6	5.660
24	5 9 57.82	2.7984	N.26 59 39.9	5.449

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 17.					**FRIDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 9 57.82	2.7984	N.26 59 39.9	5.449	0	7 23 36.40	2.6885	N.27 15 22.2	4.598
1	5 12 45.81	2.8012	27 5 0.5	5.238	1	7 26 17.50	2.6814	27 10 40.7	4.784
2	5 15 33.97	2.8039	27 10 8.4	5.026	2	7 28 58.17	2.6742	27 5 48.1	4.968
3	5 18 22.28	2.8063	27 15 3.6	4.813	3	7 31 38.40	2.6668	27 0 44.5	5.151
4	5 21 10.72	2.8084	27 19 46.0	4.600	4	7 34 18.19	2.6594	26 55 30.0	5.332
5	5 23 59.29	2.8104	27 24 15.6	4.386	5	7 36 57.53	2.6519	26 50 4.6	5.512
6	5 26 47.97	2.8122	27 28 32.3	4.171	6	7 39 36.42	2.6442	26 44 28.5	5.690
7	5 29 36.75	2.8137	27 32 36.1	3.956	7	7 42 14.84	2.6364	26 38 41.8	5.866
8	5 32 25.61	2.8149	27 36 27.0	3.741	8	7 44 52.79	2.6286	26 32 44.6	6.041
9	5 35 14.54	2.8160	27 40 5.0	3.525	9	7 47 30.27	2.6207	26 26 36.9	6.213
10	5 38 3.53	2.8169	27 43 30.0	3.308	10	7 50 7.27	2.6126	26 20 19.0	6.383
11	5 40 52.57	2.8176	27 46 42.0	3.092	11	7 52 43.78	2.6043	26 13 50.9	6.552
12	5 43 41.64	2.8180	27 49 41.0	2.875	12	7 55 19.79	2.5960	26 7 12.8	6.718
13	5 46 30.73	2.8182	27 52 27.0	2.658	13	7 57 55.30	2.5877	26 0 24.7	6.883
14	5 49 19.82	2.8181	27 54 59.9	2.440	14	8 0 30.31	2.5793	25 53 26.8	7.047
15	5 52 8.90	2.8178	27 57 19.8	2.223	15	8 3 4.82	2.5708	25 46 19.1	7.208
16	5 54 57.96	2.8173	27 59 26.7	2.006	16	8 5 38.81	2.5622	25 39 1.8	7.367
17	5 57 46.98	2.8166	28 1 20.6	1.789	17	8 8 12.28	2.5535	25 31 35.1	7.523
18	6 0 35.95	2.8156	28 3 1.4	1.572	18	8 10 45.23	2.5448	25 23 59.0	7.679
19	6 3 24.85	2.8144	28 4 29.2	1.355	19	8 13 17.66	2.5361	25 16 13.6	7.832
20	6 6 13.68	2.8131	28 5 44.0	1.138	20	8 15 49.56	2.5272	25 8 19.1	7.984
21	6 9 2.42	2.8114	28 6 45.8	0.922	21	8 18 20.93	2.5183	25 0 15.5	8.133
22	6 11 51.05	2.8095	28 7 34.7	0.707	22	8 20 51.76	2.5094	24 52 3.1	8.280
23	6 14 39.56	2.8074	N.28 8 10.6	0.491	23	8 23 22.06	2.5005	N.24 43 41.9	8.426
	THURSDAY 18.					**SATURDAY 20.**			
0	6 17 27.94	2.8051	N.28 8 33.6	0.276	0	8 25 51.82	2.4915	N.24 35 12.0	8.569
1	6 20 16.17	2.8025	28 8 43.7	+ 0.062	1	8 28 21.04	2.4825	24 26 33.6	8.710
2	6 23 4.24	2.7997	28 8 41.0	− 0.152	2	8 30 49.72	2.4734	24 17 46.8	8.850
3	6 25 52.14	2.7967	28 8 25.5	0.365	3	8 33 17.85	2.4643	24 8 51.6	8.988
4	6 28 39.85	2.7935	28 7 57.2	0.577	4	8 35 45.44	2.4552	23 59 48.2	9.123
5	6 31 27.36	2.7902	28 7 16.2	0.789	5	8 38 12.48	2.4462	23 50 36.8	9.257
6	6 34 14.67	2.7866	28 6 22.5	1.000	6	8 40 38.98	2.4371	23 41 17.4	9.388
7	6 37 1.75	2.7827	28 5 16.2	1.210	7	8 43 4.93	2.4279	23 31 50.2	9.517
8	6 39 48.59	2.7786	28 3 57.3	1.418	8	8 45 30.33	2.4188	23 22 15.3	9.646
9	6 42 35.18	2.7743	28 2 26.0	1.626	9	8 47 55.19	2.4097	23 12 32.7	9.772
10	6 45 21.51	2.7699	28 0 42.2	1.833	10	8 50 19.50	2.4006	23 2 42.7	9.894
11	6 48 7.57	2.7653	27 58 46.0	2.039	11	8 52 43.26	2.3915	22 52 45.4	10.016
12	6 50 53.35	2.7605	27 56 37.5	2.244	12	8 55 6.48	2.3824	22 42 40.8	10.136
13	6 53 38.83	2.7554	27 54 16.7	2.447	13	8 57 29.15	2.3733	22 32 29.1	10.253
14	6 56 24.00	2.7502	27 51 43.8	2.649	14	8 59 51.28	2.3642	22 22 10.4	10.369
15	6 59 8.85	2.7448	27 48 58.8	2.851	15	9 2 12.86	2.3552	22 11 44.8	10.483
16	7 1 53.37	2.7392	27 46 1.7	3.051	16	9 4 33.90	2.3462	22 1 12.4	10.596
17	7 4 37.55	2.7333	27 42 52.7	3.249	17	9 6 54.40	2.3372	21 50 33.3	10.706
18	7 7 21.37	2.7273	27 39 31.8	3.447	18	9 9 14.37	2.3283	21 39 47.7	10.813
19	7 10 4.83	2.7213	27 35 59.1	3.642	19	9 11 33.80	2.3193	21 28 55.7	10.919
20	7 12 47.93	2.7151	27 32 14.7	3.836	20	9 13 52.69	2.3104	21 17 57.4	11.024
21	7 15 30.64	2.7086	27 28 18.8	4.028	21	9 16 11.05	2.3016	21 6 52.8	11.127
22	7 18 12.96	2.7020	27 24 11.4	4.219	22	9 18 28.88	2.2928	20 55 42.1	11.228
23	7 20 54.88	2.6953	27 19 52.5	4.410	23	9 20 46.19	2.2841	20 44 25.4	11.327
24	7 23 36.40	2.6885	N.27 15 22.2	4.598	24	9 23 2.97	2.2753	N.20 33 2.9	11.423

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 21.					**TUESDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 23 2.97	2.2753	N.20 33 2.9	11.423	0	11 3 28.83	1.9400	N.10 3 48.0	14.242
1	9 25 19.23	2.2666	20 21 34.6	11.519	1	11 5 25.08	1.9352	9 49 32.7	14.268
2	9 27 34.97	2.2580	20 10 0.6	11.613	2	11 7 21.05	1.9304	9 35 15.9	14.293
3	9 29 50.19	2.2494	19 58 21.0	11.705	3	11 9 16.73	1.9257	9 20 57.6	14.318
4	9 32 4.90	2.2409	19 46 36.0	11.794	4	11 11 12.13	1.9210	9 6 37.8	14.341
5	9 34 19.10	2.2324	19 34 45.7	11.882	5	11 13 7.25	1.9165	8 52 16.7	14.363
6	9 36 32.79	2.2240	19 22 50.1	11.969	6	11 15 2.11	1.9121	8 37 54.3	14.384
7	9 38 45.98	2.2157	19 10 49.4	12.054	7	11 16 56.70	1.9077	8 23 30.6	14.404
8	9 40 58.67	2.2074	18 58 43.6	12.137	8	11 18 51.03	1.9034	8 9 5.8	14.423
9	9 43 10.87	2.1992	18 46 32.9	12.218	9	11 20 45.11	1.8992	7 54 39.9	14.441
10	9 45 22.57	2.1910	18 34 17.4	12.298	10	11 22 38.94	1.8952	7 40 12.9	14.458
11	9 47 33.79	2.1829	18 21 57.2	12.376	11	11 24 32.53	1.8912	7 25 44.9	14.474
12	9 49 44.52	2.1748	18 9 32.3	12.452	12	11 26 25.88	1.8872	7 11 16.0	14.489
13	9 51 54.77	2.1669	17 57 2.9	12.527	13	11 28 19.00	1.8834	6 56 46.2	14.503
14	9 54 4.55	2.1591	17 44 29.1	12.600	14	11 30 11.89	1.8797	6 42 15.6	14.516
15	9 56 13.87	2.1514	17 31 50.9	12.672	15	11 32 4.56	1.8760	6 27 44.3	14.528
16	9 58 22.72	2.1436	17 19 8.5	12.742	16	11 33 57.01	1.8724	6 13 12.3	14.539
17	10 0 31.10	2.1359	17 6 21.9	12.811	17	11 35 49.25	1.8690	5 58 39.6	14.550
18	10 2 39.02	2.1283	16 53 31.2	12.878	18	11 37 41.29	1.8656	5 44 6.3	14.559
19	10 4 46.49	2.1208	16 40 36.6	12.943	19	11 39 33.13	1.8623	5 29 32.5	14.567
20	10 6 53.52	2.1134	16 27 38.1	13.007	20	11 41 24.77	1.8591	5 14 58.2	14.575
21	10 9 0.10	2.1060	16 14 35.8	13.069	21	11 43 16.22	1.8559	5 0 23.5	14.582
22	10 11 6.24	2.0988	16 1 29.8	13.130	22	11 45 7.48	1.8529	4 45 48.4	14.587
23	10 13 11.95	2.0917	N.15 48 20.2	13.189	23	11 46 58.57	1.8501	N. 4 31 13.0	14.592
	MONDAY 22.					**WEDNESDAY 24.**			
0	10 15 17.24	2.0846	N.15 35 7.1	13.247	0	11 48 49.49	1.8472	N. 4 16 37.3	14.596
1	10 17 22.10	2.0775	15 21 50.6	13.303	1	11 50 40.24	1.8444	4 2 1.4	14.599
2	10 19 26.54	2.0706	15 8 30.7	13.359	2	11 52 30.82	1.8417	3 47 25.4	14.601
3	10 21 30.57	2.0637	14 55 7.5	13.412	3	11 54 21.24	1.8391	3 32 49.3	14.602
4	10 23 34.19	2.0569	14 41 41.2	13.464	4	11 56 11.51	1.8366	3 18 13.1	14.603
5	10 25 37.40	2.0502	14 28 11.8	13.516	5	11 58 1.63	1.8342	3 3 36.9	14.603
6	10 27 40.21	2.0436	14 14 39.3	13.566	6	11 59 51.61	1.8318	2 49 0.7	14.602
7	10 29 42.63	2.0372	14 1 3.9	13.613	7	12 1 41.45	1.8295	2 34 24.6	14.600
8	10 31 44.67	2.0308	13 47 25.7	13.660	8	12 3 31.15	1.8273	2 19 48.7	14.597
9	10 33 46.32	2.0244	13 33 44.7	13.706	9	12 5 20.73	1.8253	2 5 13.0	14.593
10	10 35 47.60	2.0182	13 20 1.0	13.750	10	12 7 10.19	1.8233	1 50 37.6	14.588
11	10 37 48.51	2.0120	13 6 14.7	13.793	11	12 8 59.53	1.8213	1 36 2.4	14.584
12	10 39 49.04	2.0058	12 52 25.8	13.835	12	12 10 48.75	1.8195	1 21 27.5	14.578
13	10 41 49.21	1.9999	12 38 34.5	13.875	13	12 12 37.87	1.8178	1 6 53.0	14.571
14	10 43 49.03	1.9941	12 24 40.8	13.915	14	12 14 26.89	1.8161	0 52 19.0	14.563
15	10 45 48.50	1.9883	12 10 44.7	13.953	15	12 16 15.80	1.8144	0 37 45.5	14.554
16	10 47 47.63	1.9826	11 56 46.4	13.989	16	12 18 4.62	1.8129	0 23 12.5	14.545
17	10 49 46.41	1.9769	11 42 46.0	14.025	17	12 19 53.35	1.8115	N. 0 8 40.1	14.535
18	10 51 44.86	1.9714	11 28 43.4	14.060	18	12 21 42.00	1.8102	S. 0 5 51.7	14.524
19	10 53 42.98	1.9659	11 14 38.8	14.093	19	12 23 30.57	1.8089	0 20 22.8	14.512
20	10 55 40.77	1.9606	11 0 32.3	14.124	20	12 25 19.07	1.8077	0 34 53.2	14.500
21	10 57 38.25	1.9554	10 46 23.9	14.155	21	12 27 7.49	1.8065	0 49 22.8	14.487
22	10 59 35.42	1.9503	10 32 13.7	14.186	22	12 28 55.85	1.8055	1 3 51.6	14.473
23	11 1 32.28	1.9451	10 18 1.7	14.214	23	12 30 44.15	1.8046	1 18 19.5	14.458
24	11 3 28.83	1.9400	N.10 3 48.0	14.242	24	12 32 32.40	1.8037	S. 1 32 46.6	14.443

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 25.					**SATURDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 32 32.40	1.8037	S. 1 32 46.6	14.443	0	13 59 30.48	1.8462	S. 12 33 54.9	12.817
1	12 34 20.60	1.8029	1 47 12.7	14.427	1	14 1 21.33	1.8487	12 46 42.4	12.765
2	12 36 8.75	1.8022	2 1 37.8	14.409	2	14 3 12.33	1.8512	12 59 26.7	12.712
3	12 37 56.86	1.8016	2 16 1.8	14.391	3	14 5 3.48	1.8537	13 12 7.8	12.658
4	12 39 44.94	1.8010	2 30 24.7	14.373	4	14 6 54.78	1.8564	13 24 45.6	12.603
5	12 41 32.98	1.8004	2 44 46.5	14.354	5	14 8 46.25	1.8591	13 37 20.1	12.548
6	12 43 20.99	1.8000	2 59 7.2	14.334	6	14 10 37.88	1.8619	13 49 51.3	12.492
7	12 45 8.98	1.7997	3 13 26.6	14.313	7	14 12 29.67	1.8647	14 2 19.1	12.434
8	12 46 56.96	1.7995	3 27 44.7	14.291	8	14 14 21.64	1.8676	14 14 43.4	12.376
9	12 48 44.92	1.7993	3 42 1.5	14.269	9	14 16 13.78	1.8704	14 27 4.2	12.317
10	12 50 32.87	1.7992	3 56 17.0	14.246	10	14 18 6.09	1.8733	14 39 21.4	12.258
11	12 52 20.82	1.7992	4 10 31.0	14.222	11	14 19 58.58	1.8764	14 51 35.1	12.198
12	12 54 8.77	1.7992	4 24 43.6	14.197	12	14 21 51.26	1.8795	15 3 45.2	12.137
13	12 55 56.73	1.7993	4 38 54.7	14.172	13	14 23 44.12	1.8826	15 15 51.6	12.075
14	12 57 44.69	1.7994	4 53 4.2	14.146	14	14 25 37.17	1.8857	15 27 54.2	12.012
15	12 59 32.66	1.7997	5 7 12.2	14.120	15	14 27 30.40	1.8888	15 39 53.0	11.948
16	13 1 20.65	1.8001	5 21 18.6	14.092	16	14 29 23.82	1.8920	15 51 48.0	11.884
17	13 3 8.67	1.8005	5 35 23.3	14.063	17	14 31 17.44	1.8953	16 3 39.1	11.818
18	13 4 56.71	1.8009	5 49 26.2	14.034	18	14 33 11.26	1.8987	16 15 26.2	11.752
19	13 6 44.78	1.8015	6 3 27.4	14.005	19	14 35 5.28	1.9020	16 27 9.3	11.685
20	13 8 32.89	1.8021	6 17 26.8	13.974	20	14 36 59.50	1.9054	16 38 48.4	11.618
21	13 10 21.04	1.8028	6 31 24.3	13.943	21	14 38 53.93	1.9088	16 50 23.5	11.551
22	13 12 9.23	1.8036	6 45 19.9	13.911	22	14 40 48.56	1.9123	17 1 54.5	11.481
23	13 13 57.47	1.8044	S. 6 59 13.6	13.879	23	14 42 43.41	1.9159	S. 17 13 21.2	11.409
	FRIDAY 26.					**SUNDAY 28.**			
0	13 15 45.75	1.8052	S. 7 13 5.4	13.846	0	14 44 38.47	1.9195	S. 17 24 43.6	11.338
1	13 17 34.09	1.8062	7 26 55.1	13.811	1	14 46 33.75	1.9231	17 36 1.7	11.267
2	13 19 22.49	1.8073	7 40 42.7	13.776	2	14 48 29.24	1.9267	17 47 15.6	11.195
3	13 21 10.96	1.8084	7 54 28.2	13.741	3	14 50 24.95	1.9303	17 58 25.1	11.122
4	13 22 59.50	1.8096	8 8 11.6	13.704	4	14 52 20.88	1.9341	18 9 30.2	11.047
5	13 24 48.11	1.8108	8 21 52.7	13.667	5	14 54 17.04	1.9378	18 20 30.8	10.972
6	13 26 36.79	1.8120	8 35 31.6	13.629	6	14 56 13.42	1.9416	18 31 26.8	10.896
7	13 28 25.55	1.8134	8 49 8.2	13.590	7	14 58 10.03	1.9454	18 42 18.3	10.819
8	13 30 14.40	1.8149	9 2 42.4	13.551	8	15 0 6.87	1.9493	18 53 5.1	10.741
9	13 32 3.34	1.8164	9 16 14.3	13.511	9	15 2 3.94	1.9532	19 3 47.2	10.662
10	13 33 52.37	1.8179	9 29 43.7	13.469	10	15 4 1.25	1.9571	19 14 24.5	10.583
11	13 35 41.49	1.8195	9 43 10.6	13.428	11	15 5 58.79	1.9610	19 24 57.1	10.503
12	13 37 30.71	1.8212	9 56 35.1	13.386	12	15 7 56.57	1.9650	19 35 24.9	10.422
13	13 39 20.04	1.8230	10 9 57.0	13.342	13	15 9 54.59	1.9690	19 45 47.8	10.340
14	13 41 9.47	1.8248	10 23 16.2	13.298	14	15 11 52.85	1.9729	19 56 5.7	10.257
15	13 42 59.01	1.8267	10 36 32.8	13.254	15	15 13 51.34	1.9768	20 6 18.6	10.173
16	13 44 48.67	1.8287	10 49 46.7	13.208	16	15 15 50.07	1.9809	20 16 26.5	10.088
17	13 46 38.45	1.8306	11 2 57.8	13.162	17	15 17 49.05	1.9851	20 26 29.2	10.003
18	13 48 28.34	1.8326	11 16 6.2	13.116	18	15 19 48.28	1.9892	20 36 26.8	9.916
19	13 50 18.36	1.8348	11 29 11.7	13.068	19	15 21 47.75	1.9932	20 46 19.2	9.829
20	13 52 8.51	1.8370	11 42 14.3	13.019	20	15 23 47.47	1.9973	20 56 6.3	9.742
21	13 53 58.80	1.8392	11 55 14.0	12.970	21	15 25 47.43	2.0014	21 5 48.2	9.653
22	13 55 49.22	1.8415	12 8 10.7	12.919	22	15 27 47.64	2.0057	21 15 24.7	9.563
23	13 57 39.78	1.8438	12 21 4.3	12.868	23	15 29 48.11	2.0099	21 24 55.8	9.472
24	13 59 30.48	1.8462	S. 12 33 54.9	12.817	24	15 31 48.83	2.0141	S. 21 34 21.4	9.381

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 31 48.83	2.0141	S.21 34 21.4	9.381
1	15 33 49.80	2.0182	21 43 41.5	9.289
2	15 35 51.02	2.0224	21 52 56.0	9.196
3	15 37 52 49	2.0266	22 2 5.0	9.102
4	15 39 54.21	2.0308	22 11 8.3	9.007
5	15 41 56.18	2.0350	22 20 5.8	8.911
6	15 43 58.41	2.0392	22 28 57.6	8.815
7	15 46 0.89	2.0434	22 37 43.6	8.717
8	15 48 3.62	2.0477	22 46 23.7	8.619
9	15 50 6.61	2.0519	22 54 57.9	8.520
10	15 52 9.85	2.0562	23 3 26.1	8.420
11	15 54 13.35	2.0604	23 11 48.3	8.320
12	15 56 17.10	2.0646	23 20 4.5	8.218
13	15 58 21.10	2.0688	23 28 14.5	8.115
14	16 0 25.35	2.0730	23 36 18.3	8.012
15	16 2 29.86	2.0772	23 44 16.0	7.909
16	16 4 34.62	2.0813	23 52 7.4	7.804
17	16 6 39.62	2.0854	23 59 52.4	7.698
18	16 8 44.87	2.0896	24 7 31.1	7.592
19	16 10 50.37	2.0937	24 15 3.4	7.484
20	16 12 56.12	2.0978	24 22 29.2	7.376
21	16 15 2.11	2.1019	24 29 48.5	7.267
22	16 17 8.34	2.1059	24 37 1.2	7.157
23	16 19 14.82	2.1101	S.24 44 7.3	7.047

TUESDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 21 21.55	2.1141	S.24 51 6.8	6.936
1	16 23 28.52	2.1181	24 57 59.6	6.823
2	16 25 35.72	2.1220	25 4 45.6	6.710
3	16 27 43.16	2.1259	25 11 24.8	6.597
4	16 29 50.83	2.1298	25 17 57.2	6.483
5	16 31 58.74	2.1337	25 24 22.7	6.368
6	16 34 6.88	2.1376	25 30 41.3	6.253
7	16 36 15.25	2.1413	25 36 53.0	6.136
8	16 38 23.84	2.1451	25 42 57.6	6.018
9	16 40 32.66	2.1489	25 48 55.1	5.899
10	16 42 41.71	2.1526	25 54 45.5	5.781
11	16 44 50.97	2.1562	26 0 28.8	5.662
12	16 47 0.45	2.1598	26 6 4.9	5.542
13	16 49 10.14	2.1633	26 11 33.8	5.421
14	16 51 20.05	2.1668	26 16 55.4	5.299
15	16 53 30.17	2.1703	26 22 9.7	5.177
16	16 55 40.49	2.1737	26 27 16.7	5.054
17	16 57 51.02	2.1771	26 32 16.2	4.930
18	17 0 1.75	2.1804	26 37 8.3	4.807
19	17 2 12.67	2.1837	26 41 53.0	4.682
20	17 4 23.79	2.1869	26 46 30.1	4.556
21	17 6 35.10	2.1900	26 50 59.7	4.431
22	17 8 46.59	2.1931	26 55 21.8	4.304
23	17 10 58.27	2.1962	26 59 36.2	4.177
24	17 13 10.13	2.1992	S.27 3 43.0	4.049

WEDNESDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 13 10.13	2.1992	S.27 3 43.0	4.049
1	17 15 22.17	2.2021	27 7 42.1	3.921
2	17 17 34.38	2.2048	27 11 33.5	3.793
3	17 19 46.75	2.2075	27 15 17.1	3.662
4	17 21 59.28	2.2103	27 18 53.0	3.532
5	17 24 11.98	2.2130	27 22 21.0	3.402
6	17 26 24.84	2.2156	27 25 41.2	3.271
7	17 28 37.85	2.2180	27 28 53.5	3.139
8	17 30 51.00	2.2204	27 31 57.9	3.006
9	17 33 4.30	2.2228	27 34 54.5	2.876
10	17 35 17.74	2.2251	27 37 43.1	2.743
11	17 37 31.31	2.2274	27 40 23.7	2.610
12	17 39 45.02	2.2296	27 42 56.3	2.476
13	17 41 58.86	2.2316	27 45 20.8	2.342
14	17 44 12.81	2.2335	27 47 37.3	2.208
15	17 46 26.88	2.2354	27 49 45.8	2.074
16	17 48 41.06	2.2372	27 51 46.2	1.939
17	17 50 55.35	2.2390	27 53 38.4	1.803
18	17 53 9.74	2.2407	27 55 22.5	1.667
19	17 55 24.23	2.2423	27 56 58.4	1.531
20	17 57 38.82	2.2438	27 58 26.2	1.395
21	17 59 53.49	2.2452	27 59 45.8	1.258
22	18 2 8.24	2.2465	28 0 57.2	1.121
23	18 4 23.07	2.2478	S.28 2 0.3	0.984

THURSDAY, JUNE 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 6 37.98	2.2491	S.28 2 55.2	0.847

PHASES OF THE MOON.

		d	h	m
☾ Last Quarter .	May	8	14	24.2
● New Moon		15	10	46.6
☽ First Quarter . . .		22	2	51.7
○ Full Moon		30	3	22.5

		d	h
☾ Apogee . . .	May	2	18.0
☾ Perigee		15	18.7
☾ Apogee		29	19.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Regulus	W.	78° 43′ 14″	3054	80° 12′ 20″	3056	81° 41′ 23″	3060	83° 10′ 22″	3062
	SATURN	W.	40 7 26	3022	41 37 12	3026	43 6 53	3029	44 36 30	3031
	Spica	W.	24 40 53	3066	26 9 44	3068	27 38 33	3069	29 7 21	3069
	α Aquilæ	E.	76 15 48	3954	75 3 23	3970	73 51 14	3987	72 39 22	4007
	Fomalhaut	E.	103 38 1	3239	102 12 38	3241	100 47 17	3242	99 21 57	3243
2	Regulus	W.	90 34 29	3074	92 3 10	3076	93 31 49	3078	95 0 25	3079
	SATURN	W.	52 3 48	3043	53 33 7	3045	55 2 24	3047	56 31 38	3048
	Spica	W.	36 31 1	3076	37 59 40	3077	39 28 18	3078	40 56 55	3078
	α Aquilæ	E.	66 45 0	4118	65 35 16	4145	64 25 58	4174	63 17 7	4205
	Fomalhaut	E.	92 15 42	3250	90 50 32	3253	89 25 25	3254	88 0 20	3256
3	Regulus	W.	102 23 5	3084	103 51 34	3084	105 20 3	3084	106 48 32	3084
	SATURN	W.	63 57 29	3052	65 26 37	3053	66 55 44	3053	68 24 51	3052
	Spica	W.	48 19 48	3080	49 48 22	3080	51 16 56	3079	52 45 31	3079
	α Aquilæ	E.	57 40 52	4395	56 35 26	4443	55 30 43	4492	54 26 44	4547
	Fomalhaut	E.	80 55 27	3265	79 30 35	3267	78 5 45	3270	76 40 58	3271
	α Pegasi	E.	101 47 39	3431	100 25 57	3427	99 4 11	3424	97 42 22	3421
4	Regulus	W.	114 11 6	3079	115 39 41	3078	117 8 18	3075	118 36 58	3073
	SATURN	W.	75 50 41	3047	77 19 56	3045	78 49 13	3043	80 18 33	3039
	Spica	W.	60 8 43	3072	61 37 27	3069	63 6 14	3067	64 35 4	3064
	α Aquilæ	E.	49 19 45	4887	48 21 20	4974	47 24 4	5068	46 28 2	5170
	Fomalhaut	E.	69 37 39	3282	68 13 7	3285	66 48 38	3288	65 24 12	3291
	α Pegasi	E.	90 52 30	3409	89 30 24	3408	88 8 16	3406	86 46 6	3404
5	SATURN	W.	87 46 11	3022	89 15 57	3018	90 45 48	3012	92 15 46	3007
	Spica	W.	72 0 15	3045	73 29 32	3041	74 58 54	3035	76 28 23	3030
	Antares	W.	26 5 59	3045	27 35 16	3039	29 4 40	3034	30 34 10	3029
	Fomalhaut	E.	58 22 56	3307	56 58 53	3313	55 34 56	3318	54 11 5	3323
	α Pegasi	E.	79 54 49	3398	78 32 30	3396	77 10 9	3395	75 47 47	3395
6	SATURN	W.	99 47 22	2975	101 18 6	2967	102 49 0	2960	104 20 3	2951
	Spica	W.	83 57 38	2997	85 27 54	2990	86 58 19	2981	88 28 55	2973
	Antares	W.	38 3 34	2995	39 33 53	2988	41 4 21	2979	42 35 0	2971
	Fomalhaut	E.	47 13 44	3365	45 50 47	3376	44 28 3	3390	43 5 35	3405
	α Pegasi	E.	68 55 56	3396	67 33 35	3398	66 11 16	3400	64 48 59	3401
	SUN	E.	119 32 26	3357	118 9 20	3348	116 46 4	3339	115 22 38	3331
7	Spica	W.	96 4 41	2926	97 36 27	2915	99 8 27	2904	100 40 41	2892
	Antares	W.	50 11 3	2923	51 42 53	2912	53 14 57	2901	54 47 15	2889
	α Pegasi	E.	57 58 25	3423	56 36 35	3431	55 14 53	3439	53 53 21	3450
	SUN	E.	108 22 42	3278	106 58 5	3267	105 33 15	3254	104 8 10	3242
8	Spica	W.	108 25 42	2829	109 59 32	2816	111 33 39	2801	113 8 5	2787
	Antares	W.	62 32 38	2825	64 6 33	2811	65 40 46	2798	67 15 17	2783
	α Pegasi	E.	47 9 15	3532	45 49 26	3556	44 30 4	3586	43 11 14	3620
	SUN	E.	96 58 57	3173	95 32 16	3159	94 5 18	3143	92 38 1	3129
9	Spica	W.	121 5 6	2710	122 41 32	2695	124 18 19	2678	125 55 28	2662
	Antares	W.	75 12 48	2705	76 49 21	2689	78 26 15	2672	80 3 32	2656
	SUN	E.	85 16 44	3044	83 47 26	3027	82 17 47	3009	80 47 45	2991

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Regulus	W.	84 39 18	3065	86 8 10	3068	87 36 59	3070	89 5 45	3072
	Saturn	W.	46 6 4	3034	47 35 35	3037	49 5 2	3039	50 34 26	3041
	Spica	W.	30 36 8	3070	32 4 54	3072	33 33 38	3073	35 2 20	3074
	α Aquilæ	E.	71 27 49	4026	70 16 35	4046	69 5 41	4069	67 55 9	4092
	Fomalhaut	E.	97 56 39	3944	96 31 22	3946	95 6 7	3947	93 40 54	3948
2	Regulus	W.	96 29 0	3061	97 57 33	3062	99 26 5	3063	100 54 35	3063
	Saturn	W.	58 0 51	3050	59 30 2	3051	60 59 12	3052	62 28 21	3052
	Spica	W.	42 25 31	3079	43 54 6	3080	45 22 40	3080	46 51 14	3080
	α Aquilæ	E.	62 8 46	4238	61 0 56	4274	59 53 39	4311	58 46 57	4352
	Fomalhaut	E.	86 35 17	3958	85 10 16	3960	83 45 18	3961	82 20 21	3964
3	Regulus	W.	108 17 1	3063	109 45 31	3063	111 14 1	3062	112 42 33	3061
	Saturn	W.	69 53 59	3052	71 23 7	3051	72 52 17	3050	74 21 28	3048
	Spica	W.	54 14 6	3078	55 42 43	3077	57 11 21	3075	58 40 1	3073
	α Aquilæ	E.	53 23 33	4604	52 21 12	4668	51 19 45	4735	50 19 15	4808
	Fomalhaut	E.	75 16 13	3974	73 51 31	3976	72 26 51	3978	71 2 14	3980
	α Pegasi	E.	96 20 29	3418	94 58 33	3416	93 36 35	3414	92 14 34	3411
4	Regulus	W.	120 5 40	3071	121 34 25	3068	123 3 14	3065	124 32 7	3061
	Saturn	W.	81 47 57	3037	83 17 24	3034	84 46 55	3030	86 16 31	3026
	Spica	W.	66 3 58	3061	67 32 55	3057	69 1 57	3053	70 31 4	3050
	α Aquilæ	E.	45 33 18	5283	44 39 58	5404	43 48 6	5538	42 57 49	5686
	Fomalhaut	E.	63 59 50	3294	62 35 31	3296	61 11 15	3300	59 47 3	3304
	α Pegasi	E.	85 23 54	3402	84 1 40	3401	82 39 25	3400	81 17 8	3398
5	Saturn	W.	93 45 50	3001	95 16 1	2995	96 46 20	2989	98 16 47	2982
	Spica	W.	77 57 59	3024	79 27 42	3018	80 57 32	3011	82 27 31	3005
	Antares	W.	32 3 47	3022	33 33 32	3017	35 3 24	3009	36 33 25	3003
	Fomalhaut	E.	52 47 20	3329	51 23 42	3337	50 0 13	3345	48 36 53	3354
	α Pegasi	E.	74 25 25	3394	73 3 2	3395	71 40 40	3395	70 18 18	3395
6	Saturn	W.	105 51 17	2942	107 22 42	2934	108 54 18	2924	110 26 6	2914
	Spica	W.	89 59 41	2965	91 30 38	2955	93 1 47	2946	94 33 8	2936
	Antares	W.	44 5 49	2962	45 36 50	2953	47 8 2	2943	48 39 26	2933
	Fomalhaut	E.	41 43 24	3423	40 21 34	3444	39 0 7	3468	37 39 7	3497
	α Pegasi	E.	63 26 44	3404	62 4 32	3408	60 42 25	3412	59 20 22	3417
	Sun	E.	113 59 2	3321	112 35 15	3311	111 11 16	3300	109 47 5	3290
7	Spica	W.	102 13 10	2880	103 45 54	2868	105 18 54	2855	106 52 10	2843
	Antares	W.	56 19 48	2877	57 52 36	2865	59 25 40	2852	60 59 0	2838
	α Pegasi	E.	52 32 1	3462	51 10 54	3475	49 50 2	3491	48 29 28	3510
	Sun	E.	102 42 51	3229	101 17 16	3216	99 51 26	3203	98 25 20	3188
8	Spica	W.	114 42 50	2772	116 17 54	2757	117 53 18	2742	119 29 2	2727
	Antares	W.	68 50 7	2768	70 25 17	2753	72 0 47	2738	73 36 37	2722
	α Pegasi	E.	41 53 1	3659	40 35 30	3703	39 18 46	3755	38 2 57	3816
	Sun	E.	91 10 26	3112	89 42 31	3096	88 14 16	3078	86 45 40	3062
9	Spica	W.	127 32 59	2645	129 10 53	2628	130 49 10	2610	132 27 51	2593
	Antares	W.	81 41 11	2638	83 19 14	2621	84 57 40	2604	86 36 30	2585
	Sun	E.	79 17 21	2972	77 46 33	2954	76 15 22	2936	74 43 47	2916

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Antares	W.	88° 15′ 45″	2568	89° 55′ 24″	2549	91° 35′ 29″	2531	93° 15′ 59″	2513
	α Aquilæ	W.	48 27 44	4373	49 33 30	4266	50 40 54	4165	51 49 53	4072
	Sun	E.	73 11 48	2896	71 39 24	2876	70 6 35	2857	68 33 21	2838
11	Antares	W.	101 44 56	2420	103 28 2	2401	105 11 35	2382	106 55 35	2364
	α Aquilæ	W.	57 56 1	3685	59 13 4	3622	60 31 15	3562	61 50 31	3505
	Sun	E.	60 40 47	2738	59 4 58	2718	57 28 42	2698	55 52 0	2679
12	α Aquilæ	W.	68 41 35	3266	70 6 26	3227	71 32 3	3189	72 58 25	3153
	Fomalhaut	W.	36 24 29	2831	37 58 16	2771	39 33 22	2716	41 9 41	2666
	Sun	E.	47 41 58	2583	46 2 40	2565	44 22 57	2547	42 42 49	2529
13	α Aquilæ	W.	80 20 3	3009	81 50 4	2988	83 20 32	2967	84 51 26	2949
	Fomalhaut	W.	49 26 27	2470	51 8 23	2438	52 51 3	2410	54 34 24	2383
	Sun	E.	34 16 12	2448	32 33 46	2434	30 51 0	2420	29 7 54	2408
17	Sun	W.	22 25 45	2321	24 11 14	2325	25 56 37	2332	27 41 50	2340
	Regulus	E.	69 31 9	2023	67 38 11	2032	65 45 27	2041	63 52 57	2051
	Saturn	E.	107 17 56	2001	105 24 24	2009	103 31 4	2017	101 37 57	2026
18	Sun	W.	36 24 27	2395	38 8 9	2408	39 51 32	2422	41 34 36	2436
	Regulus	E.	54 34 37	2111	52 43 54	2124	50 53 32	2139	49 3 32	2153
	Saturn	E.	92 16 28	2084	90 25 4	2098	88 34 1	2111	86 43 18	2125
19	Sun	W.	50 4 35	2515	51 45 27	2532	53 25 56	2549	55 6 1	2566
	Regulus	E.	39 59 25	2237	38 11 52	2256	36 24 47	2275	34 38 10	2294
	Saturn	E.	77 35 14	2200	75 46 46	2216	73 58 43	2233	72 11 4	2249
	Spica	E.	93 57 13	2214	92 9 6	2230	90 21 23	2246	88 34 4	2262
20	Sun	W.	63 20 18	2657	64 57 55	2676	66 35 7	2695	68 11 54	2714
	Mars	W.	28 59 7	2581	30 38 28	2596	32 17 28	2612	33 56 6	2628
	Saturn	E.	63 19 1	2335	61 33 52	2352	59 49 8	2370	58 4 50	2387
	Spica	E.	79 43 40	2348	77 58 51	2366	76 14 27	2383	74 30 28	2401
21	Sun	W.	76 9 33	2808	77 43 51	2826	79 17 45	2845	80 51 15	2863
	Mars	W.	42 3 46	2712	43 40 10	2729	45 16 11	2746	46 51 50	2763
	Pollux	W.	24 54 19	2491	26 35 45	2507	28 16 48	2525	29 57 27	2540
	Saturn	E.	49 29 35	2475	47 47 46	2492	46 6 22	2510	44 25 22	2526
	Spica	E.	65 56 51	2489	64 15 22	2506	62 34 17	2523	60 53 36	2540
22	Sun	W.	88 32 57	2952	90 4 10	2969	91 35 1	2986	93 5 31	3002
	Mars	W.	54 44 30	2847	56 17 57	2863	57 51 3	2880	59 23 48	2895
	Pollux	W.	38 15 8	2621	39 53 35	2637	41 31 40	2652	43 9 24	2667
	Saturn	E.	36 6 10	2610	34 27 28	2625	32 49 7	2641	31 11 8	2656
	Spica	E.	52 36 5	2624	50 57 43	2640	49 19 43	2657	47 42 5	2672
	Antares	E.	98 28 3	2618	96 49 33	2634	95 11 24	2650	93 33 37	2665
23	Sun	W.	100 32 58	3082	102 1 29	3097	103 29 42	3112	104 57 37	3127
	Mars	W.	67 2 38	2971	68 33 27	2985	70 3 59	2999	71 34 13	3013
	Pollux	W.	51 13 6	2740	52 48 53	2753	54 24 22	2766	55 59 34	2780
	Spica	E.	39 39 7	2749	38 3 32	2763	36 28 16	2778	34 53 19	2792
	Antares	E.	85 29 43	2738	83 53 54	2753	82 18 24	2766	80 43 11	2779

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	Antares	W.	94° 56′ 54″	2494	96° 38′ 16″	2476	98° 20′ 3″	2458	100° 2′ 16″	2438
	α Aquilæ	W.	53 0 22	3984	54 12 17	3903	55 25 34	3825	56 40 10	3753
	Sun	E.	66 59 42	2818	65 25 37	2798	63 51 7	2778	62 16 10	2758
11	Antares	W.	108 40 1	2346	110 24 54	2328	112 10 13	2310	113 55 58	2291
	α Aquilæ	W.	63 10 50	3451	64 32 9	3401	65 54 24	3353	67 17 34	3309
	Sun	E.	54 14 52	2660	52 37 18	2640	50 59 17	2621	49 20 50	2602
12	α Aquilæ	W.	74 25 30	3121	75 53 14	3090	77 21 36	3061	78 50 33	3034
	Fomalhaut	W.	42 47 6	2620	44 25 34	2578	46 4 59	2539	47 45 18	2503
	Sun	E.	41 2 16	2512	39 21 19	2495	37 39 59	2479	35 58 16	2464
13	α Aquilæ	W.	86 22 43	2939	87 54 21	2917	89 26 18	2905	90 58 30	2894
	Fomalhaut	W.	56 18 23	2358	58 2 58	2335	59 48 7	2313	61 33 47	2294
	Sun	E.	27 24 30	2396	25 40 49	2384	23 56 52	2375	22 12 42	2368
17	Sun	W.	29 26 51	2350	31 11 38	2359	32 56 11	2371	34 40 27	2382
	Regulus	E.	62 0 42	2062	60 8 44	2073	58 17 3	2085	56 25 40	2098
	Saturn	E.	99 45 6	2038	97 52 31	2048	96 0 12	2060	94 8 11	2072
18	Sun	W.	43 17 19	2451	44 59 41	2467	46 41 41	2482	48 23 19	2498
	Regulus	E.	47 13 54	2169	45 24 40	2185	43 35 50	2202	41 47 25	2218
	Saturn	E.	84 52 57	2139	83 2 57	2154	81 13 20	2169	79 24 5	2184
19	Sun	W.	56 45 42	2585	58 24 58	2602	60 3 50	2621	61 42 16	2639
	Regulus	E.	32 52 1	2314	31 6 22	2335	29 21 14	2357	27 36 38	2380
	Saturn	E.	70 23 50	2266	68 37 0	2283	66 50 35	2300	65 4 35	2317
	Spica	E.	86 47 9	2279	85 0 39	2296	83 14 34	2313	81 28 54	2231
20	Sun	W.	69 48 15	2733	71 24 11	2751	72 59 43	2770	74 34 50	2788
	Mars	W.	35 34 23	2644	37 12 18	2661	38 49 50	2678	40 26 59	2695
	Saturn	E.	56 20 57	2405	54 37 29	2422	52 54 26	2440	51 11 48	2458
	Spica	E.	72 46 55	2418	71 3 46	2436	69 21 3	2454	67 38 45	2471
21	Sun	W.	82 24 21	2881	83 57 4	2899	85 29 24	2916	87 1 22	2935
	Mars	W.	48 27 6	2780	50 2 0	2797	51 36 32	2814	53 10 42	2831
	Pollux	W.	31 37 44	2557	33 17 38	2573	34 57 10	2589	36 36 20	2605
	Saturn	E.	42 44 45	2543	41 4 32	2560	39 24 42	2577	37 45 15	2593
	Spica	E.	59 13 19	2558	57 33 26	2574	55 53 56	2591	54 14 49	2606
22	Sun	W.	94 35 41	3019	96 5 30	3035	97 34 59	3052	99 4 8	3067
	Mars	W.	60 56 13	2911	62 28 18	2926	64 0 4	2942	65 31 30	2956
	Pollux	W.	44 46 48	2682	46 23 52	2697	48 0 36	2711	49 37 1	2726
	Saturn	E.	29 33 29	2672	27 56 11	2687	26 19 13	2701	24 42 35	2716
	Spica	E.	46 4 48	2688	44 27 52	2704	42 51 17	2719	41 15 2	2734
	Antares	E.	91 56 10	2680	90 19 3	2695	88 42 17	2710	87 5 50	2725
23	Sun	W.	106 25 14	3140	107 52 35	3154	109 19 39	3168	110 46 27	3181
	Mars	W.	73 4 10	3026	74 33 50	3039	76 3 14	3052	77 32 22	3065
	Pollux	W.	57 34 28	2792	59 9 6	2805	60 43 27	2818	62 17 32	2829
	Spica	E.	33 18 40	2806	31 44 20	2820	30 10 18	2834	28 36 34	2847
	Antares	E.	79 8 15	2792	77 33 36	2805	75 59 14	2816	74 25 7	2828

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
24	Sun	W.	112° 12′ 59″	3193	113° 39′ 16″	3206	115° 5′ 18″	3218	116° 31′ 6″	3231
	Mars	W.	79 1 15	3077	80 29 53	3088	81 58 17	3101	83 26 26	3111
	Pollux	W.	63 51 22	2841	65 24 57	2852	66 58 18	2863	68 31 24	2873
	Regulus	W.	27 28 42	2888	29 1 16	2894	30 33 42	2901	32 5 59	2909
	Antares	E.	72 51 16	2840	71 17 40	2852	69 44 19	2862	68 11 12	2873
25	Sun	W.	123 36 42	3284	125 1 12	3294	126 25 31	3304	127 49 38	3313
	Mars	W.	90 43 59	3162	92 10 54	3172	93 37 37	3180	95 4 10	3189
	Pollux	W.	76 13 41	2922	77 45 32	2931	79 17 12	2939	80 48 42	2947
	Regulus	W.	39 45 2	2946	41 16 22	2953	42 47 34	2960	44 18 37	2967
	Antares	E.	60 28 52	2921	58 57 0	2931	57 25 20	2939	55 53 50	2947
	α Aquilæ	E.	108 17 11	3868	107 3 19	3860	105 49 19	3855	104 35 13	3851
26	Mars	W.	102 14 26	3227	103 40 3	3235	105 5 31	3241	106 30 52	3247
	Pollux	W.	88 23 43	2983	89 54 17	2989	91 24 43	2995	92 55 2	3001
	Regulus	W.	51 51 45	2998	53 22 0	3005	54 52 7	3010	56 22 7	3015
	Antares	E.	48 18 49	2984	46 48 16	2989	45 17 50	2996	43 47 32	3001
	α Aquilæ	E.	98 23 54	3841	97 9 34	3842	95 55 15	3843	94 40 57	3845
27	Mars	W.	113 35 51	3275	115 0 32	3279	116 25 8	3284	117 49 38	3288
	Pollux	W.	100 24 52	3026	101 54 32	3030	103 24 7	3034	104 53 37	3039
	Regulus	W.	63 50 38	3038	65 20 4	3042	66 49 25	3046	68 18 41	3049
	Saturn	W.	26 12 50	3020	27 42 38	3023	29 12 22	3027	30 42 1	3031
	Antares	E.	36 17 47	3027	34 48 8	3032	33 18 35	3036	31 49 7	3040
	α Aquilæ	E.	88 30 14	3866	87 16 20	3872	86 2 32	3879	84 48 51	3887
28	Pollux	W.	112 20 2	3054	113 49 8	3056	115 18 11	3059	116 47 11	3061
	Regulus	W.	75 44 3	3064	77 12 57	3065	78 41 49	3068	80 10 38	3070
	Saturn	W.	38 9 11	3047	39 38 26	3049	41 7 38	3052	42 36 47	3053
	Spica	W.	21 42 20	3082	23 10 51	3082	24 39 23	3081	26 7 56	3081
	α Aquilæ	E.	78 42 40	3937	77 29 58	3949	76 17 28	3963	75 5 12	3978
	Fomalhaut	E.	106 29 34	3258	105 4 33	3258	103 39 32	3257	102 14 30	3257
29	Regulus	W.	87 34 10	3077	89 2 48	3078	90 31 24	3078	92 0 0	3079
	Saturn	W.	50 1 59	3061	51 30 56	3062	52 59 52	3063	54 28 47	3064
	Spica	W.	33 30 44	3080	34 59 18	3080	36 27 52	3080	37 56 26	3080
	α Aquilæ	E.	69 7 53	4069	67 57 21	4091	66 47 11	4115	65 37 24	4140
	Fomalhaut	E.	95 9 20	3258	93 44 19	3258	92 19 18	3258	90 54 17	3259
	α Pegasi	E.	115 22 35	3487	114 1 56	3479	112 41 8	3470	111 20 10	3463
30	Regulus	W.	99 22 52	3079	100 51 27	3079	102 20 2	3078	103 48 38	3078
	Saturn	W.	61 53 15	3064	63 22 9	3064	64 51 3	3063	66 19 58	3062
	Spica	W.	45 19 23	3077	46 48 1	3076	48 16 40	3075	49 45 20	3074
	α Aquilæ	E.	59 55 9	4298	58 48 14	4339	57 41 57	4380	56 36 18	4425
	Fomalhaut	E.	83 49 23	3262	82 24 27	3263	80 59 32	3264	79 34 38	3265
	α Pegasi	E.	104 33 27	3431	103 11 46	3427	101 50 0	3423	100 28 9	3418
31	Saturn	W	73 44 51	3056	75 13 55	3054	76 43 1	3052	78 12 9	3050
	Spica	W.	57 9 4	3066	58 37 55	3064	60 6 49	3061	61 35 46	3060
	α Aquilæ	E.	51 19 10	4711	50 18 20	4785	49 18 31	4864	48 19 47	4949
	Fomalhaut	E.	72 30 29	3272	71 5 45	3274	69 41 3	3276	68 16 24	3278
	α Pegasi	E.	93 37 47	3401	92 15 32	3399	90 53 14	3396	89 30 53	3394

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
24	Sun	W.	117° 56′ 39″	3949	119° 21′ 59″	3953	120° 47′ 6″	3964	122° 12′ 0″	3974
	Mars	W.	84 54 22	3122	86 22 5	3133	87 49 35	3143	89 16 53	3153
	Pollux	W.	70 4 17	2883	71 36 57	2894	73 9 24	2904	74 41 38	2912
	Regulus	W.	33 38 6	2916	35 10 4	2924	36 41 53	2931	38 13 32	2939
	Antares	E.	66 38 18	2883	65 5 38	2893	63 33 10	2903	62 0 55	2912
25	Sun	W.	129 13 35	3322	130 37 21	3331	132 0 57	3339	133 24 23	3347
	Mars	W.	96 30 32	3198	97 56 44	3205	99 22 47	3213	100 48 41	3220
	Pollux	W.	82 20 1	2955	83 51 10	2962	85 22 10	2969	86 53 1	2977
	Regulus	W.	45 49 31	2973	47 20 17	2981	48 50 54	2987	50 21 23	2993
	Antares	E.	54 22 31	2955	52 51 22	2962	51 20 22	2969	49 49 31	2977
	α Aquilæ	E.	103 21 3	3847	102 6 49	3844	100 52 32	3842	99 38 13	3842
26	Mars	W.	107 56 5	3253	109 21 11	3259	110 46 11	3265	112 11 4	3270
	Pollux	W.	94 25 13	3007	95 55 17	3012	97 25 15	3018	98 55 6	3022
	Regulus	W.	57 52 1	3020	59 21 49	3025	60 51 31	3030	62 21 7	3034
	Antares	E.	42 17 21	3007	40 47 17	3014	39 17 21	3018	37 47 31	3023
	α Aquilæ	E.	93 26 41	3848	92 12 28	3852	90 58 19	3856	89 44 14	3860
27	Mars	W.	119 14 4	3292	120 38 25	3296	122 2 41	3300	123 26 53	3304
	Pollux	W.	106 23 2	3042	107 52 23	3045	109 21 40	3048	110 50 53	3052
	Regulus	W.	69 47 53	3052	71 17 1	3056	72 46 5	3058	74 15 6	3061
	Saturn	W.	32 11 35	3034	33 41 5	3038	35 10 31	3041	36 39 53	3044
	Antares	E.	30 19 45	3044	28 50 27	3048	27 21 14	3052	25 52 5	3056
	α Aquilæ	E.	83 35 18	3896	82 21 54	3905	81 8 39	3915	79 55 34	3925
28	Pollux	W.	118 16 8	3063	119 45 3	3065	121 13 56	3066	122 42 47	3068
	Regulus	W.	81 39 24	3072	83 8 8	3073	84 36 50	3074	86 5 31	3076
	Saturn	W.	44 5 54	3056	45 34 58	3057	47 4 0	3059	48 33 0	3060
	Spica	W.	27 36 29	3081	29 5 2	3080	30 33 36	3080	32 2 10	3080
	α Aquilæ	E.	73 53 11	3993	72 41 25	4011	71 29 56	4029	70 18 45	4048
	Fomalhaut	E.	100 49 28	3957	99 24 26	3957	97 59 24	3957	96 34 22	3957
29	Regulus	W.	93 28 35	3079	94 57 10	3080	96 25 44	3080	97 54 18	3080
	Saturn	W.	55 57 41	3064	57 26 35	3065	58 55 28	3065	60 24 21	3064
	Spica	W.	39 25 0	3079	40 53 35	3079	42 22 10	3078	43 50 46	3078
	α Aquilæ	E.	64 28 1	4166	63 19 5	4197	62 10 36	4229	61 2 37	4262
	Fomalhaut	E.	89 29 17	3959	88 4 17	3959	86 39 18	3960	85 14 20	3961
	α Pegasi	E.	109 59 4	3456	108 37 50	3449	107 16 29	3443	105 55 1	3438
30	Regulus	W.	105 17 14	3077	106 45 52	3076	108 14 31	3075	109 43 11	3073
	Saturn	W.	67 48 54	3061	69 17 51	3060	70 46 49	3059	72 15 49	3057
	Spica	W.	51 14 1	3073	52 42 44	3071	54 11 29	3070	55 40 15	3068
	α Aquilæ	E.	55 31 19	4474	54 27 4	4526	53 23 35	4584	52 20 56	4645
	Fomalhaut	E.	78 9 45	3966	76 44 54	3967	75 20 4	3969	73 55 16	3970
	α Pegasi	E.	99 6 13	3415	97 44 13	3410	96 22 8	3407	94 59 59	3404
31	Saturn	W.	79 41 20	3047	81 10 34	3045	82 39 51	3043	84 9 11	3039
	Spica	W.	63 4 45	3057	64 33 47	3054	66 2 53	3051	67 32 3	3048
	α Aquilæ	E.	47 22 11	5041	46 25 48	5144	45 30 44	5254	44 37 3	5377
	Fomalhaut	E.	66 51 47	3982	65 27 14	3984	64 2 44	3988	62 38 18	3991
	α Pegasi	E.	88 8 30	3392	86 46 4	3391	85 23 37	3389	84 1 8	3388

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	4 38 22.83	10.236	N.22 7 45.9	+19.93	15 48.33	68.44	2 23.00	0.378
Frid.	2	4 42 28.69	10.252	22 15 32.6	18.96	15 48.20	68.49	2 13.73	0.395
Sat.	3	4 46 34.94	10.268	22 22 56.1	17.99	15 48.07	68.54	2 4.06	0.410
SUN.	4	4 50 41.55	10.283	22 29 56.2	+17.01	15 47.94	68.59	1 54.03	0.425
Mon.	5	4 54 48.53	10.297	22 36 32.8	16.03	15 47.81	68.64	1 43.64	0.440
Tues.	6	4 58 55.85	10.312	22 42 45.6	15.04	15 47.69	68.68	1 32.91	0.454
Wed.	7	5 3 3.50	10.325	22 48 34.7	+14.05	15 47.57	68.72	1 21.85	0.467
Thur.	8	5 7 11.45	10.338	22 53 59.8	13.04	15 47.45	68.76	1 10.49	0.479
Frid.	9	5 11 19.67	10.348	22 59 0.8	12.04	15 47.34	68.79	0 58.86	0.490
Sat.	10	5 15 28.16	10.359	23 3 37.5	+11.02	15 47.24	68.82	0 46.96	0.500
SUN.	11	5 19 36.88	10.368	23 7 50.0	10.01	15 47.14	68.85	0 34.84	0.510
Mon.	12	5 23 45.82	10.377	23 11 37.9	8.99	15 47.04	68.88	0 22.49	0.519
Tues.	13	5 27 54.94	10.383	23 15 1.3	+ 7.96	15 46.95	68.90	0 9.95	0.525
Wed.	14	5 32 4.22	10.389	23 18 0.2	6.94	15 46.87	68.92	0 2.73	0.531
Thur.	15	5 36 13.62	10.394	23 20 34.3	5.90	15 46.79	68.93	0 15.54	0.536
Frid.	16	5 40 23.13	10.398	23 22 43.6	+ 4.87	15 46.72	68.95	0 28.45	0.540
Sat.	17	5 44 32.72	10.400	23 24 28.2	3.84	15 46.65	68.96	0 41.44	0.542
SUN.	18	5 48 42.35	10.402	23 25 47.9	2.81	15 46.59	68.97	0 54.48	0.544
Mon.	19	5 52 52.00	10.402	23 26 42.9	+ 1.77	15 46.53	68.97	1 7.54	0.544
Tues.	20	5 57 1.65	10.401	23 27 12.9	+ 0.74	15 46.48	68.97	1 20.59	0.543
Wed.	21	6 1 11.27	10.399	23 27 18.2	− 0.30	15 46.44	68.97	1 33.61	0.541
Thur.	22	6 5 20.83	10.397	23 26 58.6	− 1.33	15 46.39	68.96	1 46.58	0.539
Frid.	23	6 9 30.31	10.393	23 26 14.2	2.37	15 46.36	68.95	1 59.48	0.535
Sat.	24	6 13 39.70	10.389	23 25 5.0	3.40	15 46.32	68.94	2 12.27	0.530
SUN.	25	6 17 48.96	10.383	23 23 31.1	− 4.42	15 46.29	68.92	2 24.93	0.525
Mon.	26	6 21 58.06	10.377	23 21 32.6	5.45	15 46.26	68.90	2 37.46	0.519
Tues.	27	6 26 7.04	10.370	23 19 9.5	6.48	15 46.24	68.88	2 49.82	0.511
Wed.	28	6 30 15.81	10.361	23 16 21.8	− 7.49	15 46.22	68.86	3 2.00	0.504
Thur.	29	6 34 24.39	10.353	23 13 9.8	8.51	15 46.20	68.83	3 13.99	0.495
Frid.	30	6 38 32.74	10.343	23 9 33.3	9.52	15 46.19	68.80	3 25.76	0.485
Sat.	31	6 42 40.86	10.333	N.23 5 32.6	−10.53	15 46.18	68.76	3 37.29	0.475

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.19 from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign − indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to / Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	4 38 23.24	10.235	N. 22 7 46.7	+19.92	2 22.98	0.378	4 40 46.22
Frid.	2	4 42 29.07	10.251	22 15 33.3	18.96	2 13.71	0.394	4 44 42.78
Sat.	3	4 46 35.29	10.267	22 22 56.7	17.99	2 4.05	0.410	4 48 39.34
SUN.	4	4 50 41.88	10.282	22 29 56.7	+17.01	1 54.02	0.425	4 52 35.90
Mon.	5	4 54 48.83	10.296	22 36 33.2	16.03	1 43.63	0.440	4 56 32.46
Tues.	6	4 58 56.12	10.310	22 42 46.1	15.04	1 32.90	0.454	5 0 29.02
Wed.	7	5 3 3.73	10.323	22 48 35.0	+14.04	1 21.84	0.467	5 4 25.57
Thur.	8	5 7 11.65	10.336	22 54 0.1	13.04	1 10.48	0.479	5 8 22.13
Frid.	9	5 11 19.84	10.347	22 59 1.0	12.03	0 58.85	0.490	5 12 18.69
Sat.	10	5 15 28.30	10.357	23 3 37.7	+11.02	0 46.95	0.500	5 16 15.25
SUN.	11	5 19 36.98	10.366	23 7 50.1	10.01	0 34.83	0.510	5 20 11.81
Mon.	12	5 23 45.88	10.375	23 11 38.0	8.99	0 22.49	0.518	5 24 8.37
Tues.	13	5 27 54.97	10.382	23 15 1.4	+ 7.96	0 9.95	0.525	5 28 4.92
Wed.	14	5 32 4.21	10.388	23 18 0.2	6.94	0 2.73	0.531	5 32 1.48
Thur.	15	5 36 13.58	10.393	23 20 34.3	5.90	0 15.54	0.536	5 35 58.04
Frid.	16	5 40 23.05	10.396	23 22 43.6	+ 4.87	0 28.45	0.540	5 39 54.60
Sat.	17	5 44 32.60	10.399	23 24 28.2	3.84	0 41.44	0.542	5 43 51.16
SUN.	18	5 48 42.19	10.400	23 25 47.9	2.80	0 54.47	0.544	5 47 47.72
Mon.	19	5 52 51.81	10.401	23 26 42.8	+ 1.77	1 7.53	0.544	5 51 44.28
Tues.	20	5 57 1.42	10.400	23 27 12.9	+ 0.74	1 20.58	0.543	5 55 40.84
Wed.	21	6 1 11.00	10.398	23 27 18.2	− 0.30	1 33.60	0.541	5 59 37.40
Thur.	22	6 5 20.52	10.395	23 26 58.6	− 1.33	1 46.57	0.539	6 3 33.95
Frid.	23	6 9 29.97	10.392	23 26 14.2	2.36	1 59.46	0.535	6 7 30.51
Sat.	24	6 13 39.32	10.387	23 25 5.1	3.39	2 12.25	0.530	6 11 27.07
SUN.	25	6 17 48.54	10.381	23 23 31.3	− 4.43	2 24.91	0.525	6 15 23.63
Mon.	26	6 21 57.63	10.375	23 21 32.8	5.45	2 37.44	0.519	6 19 20.19
Tues.	27	6 26 6.55	10.368	23 19 9.8	6.47	2 49.80	0.511	6 23 16.75
Wed.	28	6 30 15.29	10.360	23 16 22.2	− 7.49	3 1.98	0.503	6 27 13.31
Thur.	29	6 34 23.83	10.351	23 13 10.2	8.51	3 13.96	0.496	6 31 9.87
Frid.	30	6 38 32.15	10.342	23 9 33.8	9.52	3 25.73	0.485	6 35 6.42
Sat.	31	6 42 40.24	10.332	N. 23 5 33.2	−10.53	3 37.26	0.475	6 39 2.98

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign − indicates that north declinations are decreasing.

Diff. for 1 Hour,
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	152	71 9 52.8	9 40.2	143.60	− 0.50	0.0062138	+26.2	19 16 3.87
2	153	72 7 18.8	7 6.0	143.57	0.53	0.0062760	25.6	19 12 7.95
3	154	73 4 44.0	4 31.0	143.53	0.53	0.0063369	25.1	19 8 12.04
4	155	74 2 8.4	1 55.2	143.50	− 0.50	0.0063964	+24.5	19 4 16.13
5	156	74 59 32.2	59 18.8	143.48	0.44	0.0064544	23.7	19 0 20.21
6	157	75 56 55.4	56 41.8	143.46	0.36	0.0065107	23.1	18 56 24.30
7	158	76 54 18.1	54 4.3	143.43	− 0.25	0.0065652	+22.4	18 52 28.39
8	159	77 51 40.2	51 26.2	143.41	− 0.13	0.0066177	21.4	18 48 32.47
9	160	78 49 1.8	48 47.7	143.39	0.00	0.0066681	20.5	18 44 36.57
10	161	79 46 22.9	46 8.6	143.37	+ 0.14	0.0067163	+19.6	18 40 40.65
11	162	80 43 43.6	43 29.1	143.35	0.26	0.0067622	18.6	18 36 44.74
12	163	81 41 3.7	40 49.0	143.32	0.37	0.0068057	17.6	18 32 48.82
13	164	82 38 23.2	38 8.3	143.30	+ 0.47	0.0068466	+16.5	18 28 52.92
14	165	83 35 42.2	35 27.1	143.28	0.55	0.0068849	15.4	18 24 57.01
15	166	84 33 0.6	32 45.3	143.25	0.60	0.0069207	14.4	18 21 1.09
16	167	85 30 18.3	30 2.8	143.22	+ 0.62	0.0069540	+13.3	18 17 5.18
17	168	86 27 35.4	27 19.7	143.20	0.60	0.0069847	12.3	18 13 9.26
18	169	87 24 51.8	24 36.0	143.17	0.55	0.0070129	11.2	18 9 13.35
19	170	88 22 7.6	21 51.6	143.14	+ 0.49	0.0070387	+10.3	18 5 17.43
20	171	89 19 22.7	19 6.5	143.11	0.41	0.0070623	9.4	18 1 21.52
21	172	90 16 37.1	16 20.7	143.09	0.30	0.0070837	8.5	17 57 25.60
22	173	91 13 50.8	13 34.2	143.06	+ 0.18	0.0071031	+ 7.7	17 53 29.70
23	174	92 11 3.9	10 47.1	143.04	+ 0.05	0.0071206	6.9	17 49 33.79
24	175	93 8 16.5	7 59.5	143.01	− 0.08	0.0071363	6.2	17 45 37.87
25	176	94 5 28.6	5 11.4	142.99	− 0.20	0.0071503	+ 5.5	17 41 41.96
26	177	95 2 40.2	2 22.8	142.98	0.31	0.0071627	4.9	17 37 46.05
27	178	95 59 51.5	59 33.9	142.96	0.40	0.0071736	4.2	17 33 50.13
28	179	96 57 2.5	56 44.7	142.95	− 0.47	0.0071830	+ 3.6	17 29 54.22
29	180	97 54 13.3	53 55.3	142.95	0.51	0.0071910	3.0	17 25 58.30
30	181	98 51 24.1	51 5.9	142.95	0.52	0.0071975	2.2	17 22 2.40
31	182	99 48 34.8	48 16.4	142.95	− 0.49	0.0072026	+ 1.8	17 18 6.48

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^{d}.0$.

Diff. for 1 Hour,
—$9^{s}.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 47.4	14 49.2	54 10.0	+0.49	54 16.5	+0.61	13 54.9	2.17	16.6
2	14 51.3	14 54.0	54 24.5	0.74	54 34.1	0.86	14 46.7	2.14	17.6
3	14 57.0	15 0.5	54 45.2	1.00	54 58.0	1.14	15 37.3	2.07	18.6
4	15 4.4	15 8.8	55 12.5	+1.28	55 28.7	+1.43	16 26.1	1.99	19.6
5	15 13.7	15 19.1	55 46.7	1.57	56 6.4	1.71	17 13.0	1.92	20.6
6	15 24.9	15 31.1	56 27.7	1.85	56 50.6	1.96	17 58.5	1.88	21.6
7	15 37.7	15 44.6	57 14.8	+2.06	57 40.1	+2.15	18 43.6	1.89	22.6
8	15 51.7	15 58.9	58 6.3	2.20	58 32.8	2.21	19 29.6	1.95	23.6
9	16 6.2	16 13.2	58 59.3	2.19	59 25.2	2.11	20 17.8	2.08	24.6
10	16 19.9	16 26.1	59 49.9	+1.98	60 12.7	+1.80	21 9.9	2.27	25.6
11	16 31.6	16 36.3	60 32.9	1.56	60 50.0	1.27	22 7.1	2.50	26.6
12	16 39.9	16 42.4	61 3.3	0.93	61 12.3	+0.52	23 9.7	2.71	27.6
13	16 43.6	16 43.4	61 16.7	+0.12	61 16.1	−0.25	.6		28.6
14	16 42.0	16 39.2	61 10.8	−0.65	61 0.6	1.04	0 16.3	2.81	0.3
15	16 35.2	16 30.1	60 46.0	1.39	60 27.4	1.69	1 23.5	2.76	1.3
16	16 24.2	16 17.5	60 5.5	−1.94	59 40.9	−2.14	2 27.6	2.57	2.3
17	16 10.2	16 2.4	59 14.2	2.31	58 46.3	2.36	3 26.2	2.32	3.3
18	15 54.8	15 47.1	58 17.7	2.35	57 49.2	2.32	4 18.9	2.08	4.3
19	15 39.4	15 32.1	57 21.1	−2.30	56 54.1	−2.20	5 6.4	1.89	5.3
20	15 25.1	15 18.5	56 28.4	2.08	56 4.4	1.92	5 50.2	1.77	6.3
21	15 12.6	15 7.1	55 42.4	1.75	55 22.4	1.57	6 31.8	1.71	7.3
22	15 2.3	14 58.1	55 4.7	−1.39	54 49.2	−1.20	7 12.7	1.70	8.3
23	14 54.4	14 51.4	54 35.9	1.02	54 24.9	0.83	7 53.9	1.74	9.3
24	14 49.0	14 47.2	54 16.0	0.65	54 9.3	0.48	8 36.5	1.82	10.3
25	14 45.9	14 45.1	54 4.5	−0.32	54 1.7	−0.16	9 21.4	1.92	11.3
26	14 44.8	14 45.0	54 0.6	−0.02	54 1.2	+0.12	10 8.9	2.03	12.3
27	14 45.6	14 46.6	54 3.4	+0.24	54 7.0	0.36	10 58.9	2.13	13.3
28	14 47.9	14 49.6	54 11.9	+0.46	54 18.1	+0.58	11 50.6	2.18	14.3
29	14 51.7	14 54.0	54 25.6	0.67	54 34.1	0.76	12 42.8	2.17	15.3
30	14 56.6	14 59.5	54 43.8	0.85	54 54.5	0.94	13 34.2	2.11	16.3
31	15 2.7	15 6.2	55 6.2	+1.02	55 19.0	+1.11	14 23.7	2.02	17.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 6 37.98	2.2491	S.28 2 55.2	0.847
1	18 8 52.96	2.2502	28 3 41.9	0.709
2	18 11 8.00	2.2511	28 4 20.3	0.571
3	18 13 23.09	2.2519	28 4 50.4	0.433
4	18 15 38.23	2.2528	28 5 12.2	0.295
5	18 17 53.43	2.2536	28 5 25.8	0.157
6	18 20 8.67	2.2543	28 5 31.1	− 0.019
7	18 22 23.95	2.2549	28 5 28.1	+ 0.120
8	18 24 39.26	2.2554	28 5 16.7	0.259
9	18 26 54.60	2.2558	28 4 57.0	0.398
10	18 29 9.96	2.2562	28 4 29.0	0.536
11	18 31 25.34	2.2564	28 3 52.7	0.674
12	18 33 40.73	2.2566	28 3 8.1	0.813
13	18 35 56.13	2.2567	28 2 15.1	0.952
14	18 38 11.53	2.2567	28 1 13.8	1.091
15	18 40 26.93	2.2566	28 0 4.2	1.230
16	18 42 42.32	2.2564	27 58 46.2	1.369
17	18 44 57.70	2.2561	27 57 19.9	1.508
18	18 47 13.05	2.2557	27 55 45.3	1.646
19	18 49 28.38	2.2553	27 54 2.4	1.784
20	18 51 43.69	2.2548	27 52 11.2	1.923
21	18 53 58.96	2.2542	27 50 11.6	2.062
22	18 56 14.19	2.2536	27 48 3.7	2.200
23	18 58 29.39	2.2529	S.27 45 47.6	2.338

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 0 44.54	2.2521	S.27 43 23.2	2.476
1	19 2 59.64	2.2512	27 40 50.5	2.614
2	19 5 14.68	2.2501	27 38 9.5	2.752
3	19 7 29.65	2.2490	27 35 20.3	2.889
4	19 9 44.56	2.2479	27 32 22.9	3.026
5	19 11 59.40	2.2467	27 29 17.2	3.163
6	19 14 14.16	2.2454	27 26 3.3	3.300
7	19 16 28.84	2.2440	27 22 41.2	3.437
8	19 18 43.44	2.2426	27 19 10.9	3.573
9	19 20 57.96	2.2412	27 15 32.5	3.708
10	19 23 12.38	2.2396	27 11 46.0	3.843
11	19 25 26.71	2.2380	27 7 51.3	3.979
12	19 27 40.94	2.2362	27 3 48.5	4.114
13	19 29 55.06	2.2344	26 59 37.6	4.248
14	19 32 9.07	2.2326	26 55 18.7	4.383
15	19 34 22.97	2.2307	26 50 51.7	4.517
16	19 36 36.76	2.2287	26 46 16.7	4.650
17	19 38 50.42	2.2267	26 41 33.7	4.783
18	19 41 3.96	2.2247	26 36 42.8	4.915
19	19 43 17.38	2.2225	26 31 43.9	5.047
20	19 45 30.66	2.2203	26 26 37.1	5.179
21	19 47 43.81	2.2180	26 21 22.4	5.311
22	19 49 56.82	2.2157	26 15 59.8	5.442
23	19 52 9.69	2.2133	26 10 29.4	5.571
24	19 54 22.42	2.2109	S.26 4 51.3	5.700

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 54 22.42	2.2109	S.26 4 51.3	5.700
1	19 56 35.00	2.2084	25 59 5.4	5.830
2	19 58 47.43	2.2060	25 53 11.7	5.959
3	20 0 59.72	2.2035	25 47 10.3	6.087
4	20 3 11.85	2.2009	25 41 1.2	6.215
5	20 5 23.82	2.1982	25 34 44.5	6.342
6	20 7 35.63	2.1955	25 28 20.1	6.469
7	20 9 47.28	2.1928	25 21 48.2	6.595
8	20 11 58.77	2.1901	25 15 8.7	6.721
9	20 14 10.09	2.1873	25 8 21.7	6.846
10	20 16 21.24	2.1844	25 1 27.2	6.970
11	20 18 32.22	2.1816	24 54 25.3	7.093
12	20 20 43.03	2.1787	24 47 16.0	7.216
13	20 22 53.67	2.1758	24 39 59.3	7.339
14	20 25 4.13	2.1728	24 32 35.3	7.462
15	20 27 14.41	2.1698	24 25 3.9	7.583
16	20 29 24.51	2.1668	24 17 25.3	7.703
17	20 31 34.43	2.1638	24 9 39.5	7.823
18	20 33 44.17	2.1608	24 1 46.6	7.942
19	20 35 53.72	2.1577	23 53 46.5	8.061
20	20 38 3.09	2.1547	23 45 39.3	8.179
21	20 40 12.28	2.1516	23 37 25.0	8.297
22	20 42 21.28	2.1484	23 29 3.7	8.413
23	20 44 30.09	2.1453	S.23 20 35.4	8.529

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 46 38.72	2.1422	S.23 12 0.2	8.644
1	20 48 47.16	2.1391	23 3 18.1	8.759
2	20 50 55.41	2.1359	22 54 29.1	8.873
3	20 53 3.47	2.1327	22 45 33.3	8.986
4	20 55 11.34	2.1296	22 36 30.8	9.099
5	20 57 19.02	2.1264	22 27 21.5	9.211
6	20 59 26.51	2.1232	22 18 5.5	9.322
7	21 1 33.81	2.1201	22 8 42.9	9.432
8	21 3 40.92	2.1170	21 59 13.7	9.542
9	21 5 47.85	2.1139	21 49 37.9	9.651
10	21 7 54.59	2.1107	21 39 55.6	9.758
11	21 10 1.14	2.1076	21 30 6.9	9.865
12	21 12 7.50	2.1044	21 20 11.8	9.972
13	21 14 13.67	2.1013	21 10 10.3	10.078
14	21 16 19.66	2.0982	21 0 2.5	10.183
15	21 18 25.46	2.0952	20 49 48.4	10.288
16	21 20 31.08	2.0921	20 39 28.0	10.391
17	21 22 36.51	2.0890	20 29 1.5	10.494
18	21 24 41.76	2.0860	20 18 28.8	10.596
19	21 26 46.83	2.0830	20 7 50.0	10.697
20	21 28 51.72	2.0800	19 57 5.2	10.797
21	21 30 56.43	2.0770	19 46 14.3	10.897
22	21 33 0.96	2.0740	19 35 17.5	10.996
23	21 35 5.31	2.0711	19 24 14.8	11.094
24	21 37 9.49	2.0682	S.19 13 6.2	11.192

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 5.					**WEDNESDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 37 9.49	2.0682	S. 19 13 6.2	11.192	0	23 13 54.10	1.9842	S. 8 39 14.4	14.894
1	21 39 13.50	2.0654	19 1 51.8	11.288	1	23 15 53.14	1.9840	8 24 19.1	14.950
2	21 41 17.34	2.0625	18 50 31.6	11.384	2	23 17 52.18	1.9839	8 9 20.4	15.005
3	21 43 21.00	2.0597	18 39 5.7	11.479	3	23 19 51.21	1.9838	7 54 18.5	15.059
4	21 45 24.50	2.0569	18 27 34.1	11.573	4	23 21 50.24	1.9839	7 39 13.4	15.112
5	21 47 27.83	2.0542	18 15 56.9	11.666	5	23 23 49.28	1.9841	7 24 5.1	15.164
6	21 49 31.00	2.0515	18 4 14.2	11.759	6	23 25 48.33	1.9843	7 8 53.7	15.215
7	21 51 34.01	2.0488	17 52 25.9	11.851	7	23 27 47.39	1.9845	6 53 39.3	15.265
8	21 53 36.86	2.0461	17 40 32.1	11.942	8	23 29 46.47	1.9848	6 38 21.9	15.314
9	21 55 39.55	2.0435	17 28 32.9	12.032	9	23 31 45.57	1.9852	6 23 1.6	15.362
10	21 57 42.08	2.0410	17 16 28.3	12.121	10	23 33 44.70	1.9858	6 7 38.4	15.409
11	21 59 44.47	2.0385	17 4 18.4	12.210	11	23 35 43.87	1.9865	5 52 12.5	15.454
12	22 1 46.71	2.0361	16 52 3.1	12.298	12	23 37 43.08	1.9872	5 36 43.9	15.499
13	22 3 48.80	2.0337	16 39 42.6	12.385	13	23 39 42.33	1.9879	5 21 12.6	15.544
14	22 5 50.75	2.0312	16 27 16.9	12.471	14	23 41 41.63	1.9888	5 5 38.6	15.587
15	22 7 52.55	2.0288	16 14 46.1	12.556	15	23 43 40.99	1.9898	4 50 2.1	15.629
16	22 9 54.21	2.0266	16 2 10.2	12.640	16	23 45 40.41	1.9908	4 34 23.1	15.670
17	22 11 55.74	2.0243	15 49 29.3	12.724	17	23 47 39.89	1.9918	4 18 41.7	15.710
18	22 13 57.13	2.0221	15 36 43.3	12.807	18	23 49 39.43	1.9930	4 2 57.9	15.749
19	22 15 58.39	2.0200	15 23 52.4	12.889	19	23 51 39.05	1.9943	3 47 11.8	15.787
20	22 17 59.53	2.0179	15 10 56.6	12.970	20	23 53 38.75	1.9957	3 31 23.4	15.824
21	22 20 0.54	2.0158	14 57 56.0	13.050	21	23 55 38.54	1.9972	3 15 32.9	15.859
22	22 22 1.43	2.0139	14 44 50.6	13.130	22	23 57 38.42	1.9988	2 59 40.3	15.894
23	22 24 2.21	2.0120	S. 14 31 40.4	13.209	23	23 59 38.40	2.0005	S. 2 43 45.6	15.927
	TUESDAY 6.					**THURSDAY 8.**			
0	22 26 2.87	2.0101	S. 14 18 25.5	13.287	0	0 1 38.48	2.0022	S. 2 27 49.0	15.959
1	22 28 3.42	2.0083	14 5 6.0	13.363	1	0 3 38.66	2.0040	2 11 50.5	15.991
2	22 30 3.86	2.0065	13 51 41.9	13.439	2	0 5 38.96	2.0060	1 55 50.1	16.022
3	22 32 4.20	2.0048	13 38 13.3	13.514	3	0 7 39.38	2.0080	1 39 47.9	16.051
4	22 34 4.44	2.0032	13 24 40.2	13.589	4	0 9 39.92	2.0101	1 23 44.0	16.078
5	22 36 4.58	2.0016	13 11 2.6	13.663	5	0 11 40.59	2.0123	1 7 38.5	16.104
6	22 38 4.63	2.0001	12 57 20.6	13.736	6	0 13 41.40	2.0146	0 51 31.5	16.129
7	22 40 4.59	1.9987	12 43 34.3	13.807	7	0 15 42.35	2.0170	0 35 23.0	16.154
8	22 42 4.47	1.9972	12 29 43.7	13.878	8	0 17 43.44	2.0194	0 19 13.0	16.178
9	22 44 4.26	1.9958	12 15 48.9	13.948	9	0 19 44.68	2.0220	S. 0 3 1.6	16.200
10	22 46 3.97	1.9946	12 1 49.9	14.018	10	0 21 46.08	2.0246	N. 0 13 11.0	16.220
11	22 48 3.61	1.9935	11 47 46.7	14.086	11	0 23 47.65	2.0276	0 29 24.8	16.240
12	22 50 3.19	1.9924	11 33 39.5	14.153	12	0 25 49.39	2.0304	0 45 39.8	16.258
13	22 52 2.70	1.9913	11 19 28.3	14.220	13	0 27 51.30	2.0333	1 1 55.8	16.275
14	22 54 2.15	1.9902	11 5 13.1	14.287	14	0 29 53.39	2.0363	1 18 12.8	16.291
15	22 56 1.53	1.9892	10 50 53.9	14.352	15	0 31 55.66	2.0394	1 34 30.7	16.306
16	22 58 0.86	1.9884	10 36 30.9	14.415	16	0 33 58.12	2.0427	1 50 49.5	16.318
17	23 0 0.14	1.9877	10 22 4.1	14.478	17	0 36 0.78	2.0461	2 7 8.9	16.328
18	23 1 59.38	1.9870	10 7 33.6	14.540	18	0 38 3.65	2.0496	2 23 28.9	16.338
19	23 3 58.58	1.9863	9 52 59.3	14.602	19	0 40 6.73	2.0531	2 39 49.5	16.348
20	23 5 57.74	1.9857	9 38 21.4	14.662	20	0 42 10.02	2.0567	2 56 10.7	16.357
21	23 7 56.86	1.9852	9 23 39.9	14.722	21	0 44 13.53	2.0604	3 12 32.3	16.363
22	23 9 55.96	1.9848	9 8 54.8	14.780	22	0 46 17.27	2.0642	3 28 54.2	16.368
23	23 11 55.04	1.9845	8 54 6.3	14.837	23	0 48 21.24	2.0680	3 45 16.4	16.372
24	23 13 54.10	1.9842	S. 8 39 14.4	14.894	24	0 50 25.45	2.0720	N. 4 1 38.8	16.374

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 50 25.45	2.0722	N. 4 1 38.8	16.374
1	0 52 29.90	2.0764	4 18 1.3	16.374
2	0 54 34.61	2.0806	4 34 23.7	16.372
3	0 56 39.57	2.0848	4 50 46.0	16.370
4	0 58 44.79	2.0892	5 7 8.1	16.367
5	1 0 50.28	2.0937	5 23 30.0	16.362
6	1 2 56.04	2.0983	5 39 51.5	16.355
7	1 5 2.08	2.1031	5 56 12.6	16.347
8	1 7 8.41	2.1079	6 12 33.1	16.336
9	1 9 15.03	2.1128	6 28 52.9	16.324
10	1 11 21.95	2.1178	6 45 12.0	16.312
11	1 13 29.17	2.1228	7 1 30.3	16.297
12	1 15 36.69	2.1280	7 17 47.6	16.280
13	1 17 44.53	2.1334	7 34 3.9	16.262
14	1 19 52.70	2.1388	7 50 19.1	16.243
15	1 22 1.19	2.1443	8 6 33.1	16.222
16	1 24 10.01	2.1498	8 22 45.7	16.198
17	1 26 19.17	2.1555	8 38 56.9	16.173
18	1 28 28.67	2.1613	8 55 6.5	16.147
19	1 30 38.52	2.1672	9 11 14.5	16.118
20	1 32 48.73	2.1732	9 27 20.7	16.088
21	1 34 59.30	2.1792	9 43 25.1	16.057
22	1 37 10.23	2.1854	9 59 27.5	16.023
23	1 39 21.54	2.1916	N.10 15 27.9	15.988

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 41 33.22	2.1978	N.10 31 26.1	15.951
1	1 43 45.28	2.2042	10 47 22.0	15.912
2	1 45 57.73	2.2108	11 3 15.5	15.870
3	1 48 10.58	2.2175	11 19 6.4	15.827
4	1 50 23.83	2.2242	11 34 54.7	15.782
5	1 52 37.48	2.2309	11 50 40.3	15.736
6	1 54 51.54	2.2377	12 6 23.0	15.688
7	1 57 6.01	2.2447	12 22 2.8	15.637
8	1 59 20.91	2.2518	12 37 39.4	15.583
9	2 1 36.23	2.2589	12 53 12.8	15.528
10	2 3 51.98	2.2661	13 8 42.8	15.472
11	2 6 8.16	2.2733	13 24 9.4	15.413
12	2 8 24.78	2.2807	13 39 32.4	15.352
13	2 10 41.85	2.2881	13 54 51.7	15.289
14	2 12 59.36	2.2956	14 10 7.1	15.224
15	2 15 17.32	2.3032	14 25 18.6	15.157
16	2 17 35.74	2.3109	14 40 26.0	15.087
17	2 19 54.63	2.3187	14 55 29.1	15.016
18	2 22 13.98	2.3264	15 10 27.9	14.943
19	2 24 33.80	2.3342	15 25 22.2	14.867
20	2 26 54.09	2.3422	15 40 11.9	14.789
21	2 29 14.86	2.3502	15 54 56.9	14.709
22	2 31 36.11	2.3583	16 9 37.0	14.626
23	2 33 57.84	2.3663	16 24 12.0	14.541
24	2 36 20.06	2.3744	N.16 38 41.9	14.454

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 36 20.06	2.3744	N.16 38 41.9	14.454
1	2 38 42.77	2.3827	16 53 6.5	14.365
2	2 41 5.98	2.3909	17 7 25.7	14.273
3	2 43 29.68	2.3992	17 21 39.3	14.179
4	2 45 53.88	2.4075	17 35 47.2	14.083
5	2 48 18.58	2.4159	17 49 49.3	13.985
6	2 50 43.79	2.4244	18 3 45.4	13.884
7	2 53 9.51	2.4329	18 17 35.4	13.781
8	2 55 35.74	2.4413	18 31 19.1	13.675
9	2 58 2.47	2.4498	18 44 56.4	13.567
10	3 0 29.72	2.4584	18 58 27.2	13.457
11	3 2 57.48	2.4670	19 11 51.3	13.345
12	3 5 25.76	2.4756	19 25 8.6	13.231
13	3 7 54.56	2.4842	19 38 19.0	13.113
14	3 10 23.87	2.4928	19 51 22.2	12.993
15	3 12 53.70	2.5015	20 4 18.2	12.871
16	3 15 24.05	2.5101	20 17 6.8	12.747
17	3 17 54.91	2.5187	20 29 47.8	12.620
18	3 20 26.29	2.5273	20 42 21.2	12.492
19	3 22 58.19	2.5360	20 54 46.8	12.360
20	3 25 30.61	2.5446	21 7 4.4	12.226
21	3 28 3.54	2.5532	21 19 13.9	12.090
22	3 30 36.99	2.5618	21 31 15.2	11.952
23	3 33 10.95	2.5703	N.21 43 8.1	11.810

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	3 35 45.42	2.5788	N.21 54 52.4	11.667
1	3 38 20.40	2.5873	22 6 28.1	11.521
2	3 40 55.89	2.5958	22 17 55.0	11.373
3	3 43 31.89	2.6042	22 29 12.9	11.222
4	3 46 8.39	2.6124	22 40 21.7	11.070
5	3 48 45.38	2.6207	22 51 21.3	10.916
6	3 51 22.87	2.6289	23 2 11.6	10.758
7	3 54 0.85	2.6371	23 12 52.3	10.598
8	3 56 39.32	2.6452	23 23 23.4	10.437
9	3 59 18.28	2.6533	23 33 44.8	10.273
10	4 1 57.72	2.6612	23 43 56.2	10.107
11	4 4 37.63	2.6690	23 53 57.6	9.939
12	4 7 18.00	2.6768	24 3 48.9	9.768
13	4 9 58.84	2.6845	24 13 29.8	9.595
14	4 12 40.14	2.6921	24 23 0.3	9.421
15	4 15 21.89	2.6996	24 32 20.3	9.244
16	4 18 4.09	2.7069	24 41 29.6	9.065
17	4 20 46.72	2.7141	24 50 28.1	8.884
18	4 23 29.78	2.7212	24 59 15.7	8.702
19	4 26 13.26	2.7282	25 7 52.3	8.517
20	4 28 57.16	2.7351	25 16 17.7	8.329
21	4 31 41.47	2.7418	25 24 31.8	8.141
22	4 34 26.18	2.7484	25 32 34.6	7.951
23	4 37 11.28	2.7547	25 40 25.9	7.758
24	4 39 56.75	2.7609	N.25 48 5.5	7.563

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 13.					**THURSDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 39 56.75	2.7609	N.25 48 5.5	7.563	0	6 55 48.19	2.8102	N.27 46 32.1	2.762
1	4 42 42.59	2.7671	25 55 33.4	7.368	1	6 58 36.66	2.8054	27 43 40.0	2.973
2	4 45 28.80	2.7731	26 2 49.6	7.171	2	7 1 24.84	2.8004	27 40 35.3	3.182
3	4 48 15.36	2.7788	26 9 53.9	6.972	3	7 4 12.71	2.7952	27 37 18.1	3.391
4	4 51 2.26	2.7844	26 16 46.2	6.771	4	7 7 0.26	2.7898	27 33 48.4	3.598
5	4 53 49.49	2.7898	26 23 26.4	6.568	5	7 9 47.49	2.7843	27 30 6.3	3.803
6	4 56 37.04	2.7951	26 29 54.4	6.364	6	7 12 34.38	2.7786	27 26 12.0	4.007
7	4 59 24.90	2.8001	26 36 10.1	6.159	7	7 15 20.92	2.7726	27 22 5.5	4.210
8	5 2 13.05	2.8049	26 42 13.5	5.952	8	7 18 7.09	2.7664	27 17 46.8	4.412
9	5 5 1.49	2.8096	26 48 4.4	5.744	9	7 20 52.89	2.7601	27 13 16.1	4.611
10	5 7 50.20	2.8141	26 53 42.8	5.535	10	7 23 38.30	2.7536	27 8 33.5	4.808
11	5 10 39.18	2.8184	26 59 8.6	5.324	11	7 26 23.32	2.7469	27 3 39.1	5.004
12	5 13 28.41	2.8224	27 4 21.7	5.112	12	7 29 7.93	2.7400	26 58 33.0	5.199
13	5 16 17.87	2.8262	27 9 22.1	4.900	13	7 31 52.12	2.7330	26 53 15.2	5.392
14	5 19 7.55	2.8298	27 14 9.7	4.686	14	7 34 35.89	2.7259	26 47 45.9	5.583
15	5 21 57.45	2.8332	27 18 44.4	4.470	15	7 37 19.23	2.7187	26 42 5.2	5.773
16	5 24 47.54	2.8363	27 23 6.1	4.254	16	7 40 2.13	2.7112	26 36 13.2	5.961
17	5 27 37.81	2.8393	27 27 14.9	4.038	17	7 42 44.57	2.7035	26 30 9.9	6.148
18	5 30 28.26	2.8421	27 31 10.7	3.821	18	7 45 26.55	2.6957	26 23 55.5	6.332
19	5 33 18.86	2.8445	27 34 53.4	3.602	19	7 48 8.06	2.6879	26 17 30.1	6.513
20	5 36 9.60	2.8467	27 38 22.9	3.383	20	7 50 49.10	2.6799	26 10 53.9	6.693
21	5 39 0.47	2.8487	27 41 39.3	3.163	21	7 53 29.65	2.6718	26 4 7.0	6.871
22	5 41 51.45	2.8505	27 44 42.5	2.943	22	7 56 9.71	2.6636	25 57 9.4	7.047
23	5 44 42.53	2.8520	N.27 47 32.5	2.722	23	7 58 49.28	2.6552	N.25 50 1.3	7.221
	WEDNESDAY 14.					**FRIDAY 16.**			
0	5 47 33.69	2.8532	N.27 50 9.2	2.501	0	8 1 28.34	2.6467	N.25 42 42.9	7.394
1	5 50 24.92	2.8542	27 52 32.6	2.279	1	8 4 6.89	2.6382	25 35 14.2	7.563
2	5 53 16.20	2.8551	27 54 42.7	2.058	2	8 6 44.92	2.6295	25 27 35.3	7.732
3	5 56 7.53	2.8557	27 56 39.6	1.836	3	8 9 22.43	2.6207	25 19 46.4	7.898
4	5 58 58.88	2.8559	27 58 23.1	1.614	4	8 11 59.41	2.6119	25 11 47.6	8.061
5	6 1 50.24	2.8560	27 59 53.3	1.392	5	8 14 35.86	2.6030	25 3 39.1	8.222
6	6 4 41.60	2.8557	28 1 10.1	1.169	6	8 17 11.77	2.5940	24 55 20.9	8.382
7	6 7 32.93	2.8552	28 2 13.6	0.947	7	8 19 47.14	2.5849	24 46 53.2	8.540
8	6 10 24.23	2.8546	28 3 3.8	0.726	8	8 22 21.96	2.5758	24 38 16.1	8.696
9	6 13 15.48	2.8537	28 3 40.7	0.504	9	8 24 56.24	2.5666	24 29 29.8	8.848
10	6 16 6.67	2.8524	28 4 4.2	0.282	10	8 27 29.96	2.5574	24 20 34.3	8.999
11	6 18 57.77	2.8509	28 4 14.5	+ 0.061	11	8 30 3.13	2.5481	24 11 29.9	9.147
12	6 21 48.78	2.8492	28 4 11.5	− 0.160	12	8 32 35.74	2.5388	24 2 16.6	9.294
13	6 24 39.68	2.8472	28 3 55.3	0.381	13	8 35 7.79	2.5295	23 52 54.6	9.438
14	6 27 30.45	2.8451	28 3 25.8	0.602	14	8 37 39.28	2.5201	23 43 24.0	9.581
15	6 30 21.09	2.8427	28 2 43.1	0.822	15	8 40 10.20	2.5106	23 33 44.9	9.721
16	6 33 11.57	2.8399	28 1 47.2	1.041	16	8 42 40.55	2.5012	23 23 57.5	9.859
17	6 36 1.88	2.8370	28 0 38.2	1.258	17	8 45 10.34	2.4917	23 14 1.9	9.995
18	6 38 52.01	2.8339	27 59 16.2	1.475	18	8 47 39.56	2.4822	23 3 58.2	10.128
19	6 41 41.95	2.8305	27 57 41.2	1.692	19	8 50 8.21	2.4727	22 53 46.5	10.259
20	6 44 31.67	2.8268	27 55 53.1	1.909	20	8 52 36.29	2.4632	22 43 27.1	10.387
21	6 47 21.17	2.8230	27 53 52.1	2.124	21	8 55 3.79	2.4536	22 33 0.0	10.514
22	6 50 10.43	2.8189	27 51 38.2	2.338	22	8 57 30.72	2.4442	22 22 25.4	10.639
23	6 52 59.44	2.8147	27 49 11.5	2.551	23	8 59 57.09	2.4347	22 11 43.3	10.762
24	6 55 48.19	2.8102	N.27 46 32.1	2.762	24	9 2 22.89	2.4252	N.22 0 53.9	10.882

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 17.					MONDAY 19.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 2 22.89	2.4252	N.22 0 53.9	10.882	0	10 48 40.27	2.0302	N.11 37 51.8	14.389
1	9 4 48.11	2.4157	21 49 57.4	11.000	1	10 50 41.89	2.0239	11 23 27.4	14.422
2	9 7 12.77	2.4062	21 38 53.9	11.117	2	10 52 43.14	2.0177	11 9 1.2	14.452
3	9 9 36.86	2.3967	21 27 43.4	11.231	3	10 54 44.02	2.0117	10 54 33.2	14.482
4	9 12 0.38	2.3872	21 16 26.2	11.342	4	10 56 44.54	2.0057	10 40 3.4	14.512
5	9 14 23.33	2.3777	21 5 2.4	11.452	5	10 58 44.71	1.9998	10 25 31.8	14.540
6	9.16 45.72	2.3684	20 53 32.0	11.560	6	11 0 44.52	1.9940	10 10 58.6	14.566
7	9 19 7.54	2.3591	20 41 55.2	11.665	7	11 2 43.99	1.9883	9 56 23.9	14.591
8	9 21 28.81	2.3498	20 30 12.2	11.768	8	11 4 43.12	1.9827	9 41 47.7	14.614
9	9 23 49.52	2.3405	20 18 23.0	11.870	9	11 6 41.92	1.9772	9 27 10.2	14.636
10	9 26 9.67	2.3313	20 6 27.8	11.969	10	11 8 40.39	1.9718	9 12 31.4	14.657
11	9 28 29.27	2.3221	19 54 26.7	12.066	11	11 10 38.54	1.9665	8 57 51.3	14.678
12	9 30 48.32	2.3129	19 42 19.9	12.161	12	11 12 36.37	1.9613	8 43 10.0	14.697
13	9 33 6.82	2.3038	19 30 7.4	12.254	13	11 14 33.89	1.9562	8 28 27.6	14.715
14	9 35 24.78	2.2947	19 17 49.4	12.346	14	11 16 31.11	1.9512	8 13 44.2	14.731
15	9 37 42.19	2.2857	19 5 25.9	12.436	15	11 18 28.03	1.9462	7 58 59.9	14.746
16	9 39 59.06	2.2768	18 52 57.1	12.523	16	11 20 24.65	1.9414	7 44 14.7	14.761
17	9 42 15.40	2.2679	18 40 23.2	12.608	17	11 22 20.99	1.9367	7 29 28.6	14.775
18	9 44 31.21	2.2591	18 27 44.2	12.691	18	11 24 17.05	1.9320	7 14 41.7	14.787
19	9 46 46.49	2.2503	18 15 0.3	12.773	19	11 26 12.83	1.9274	6 59 54.1	14.798
20	9 49 1.25	2.2416	18 2 11.5	12.853	20	11 28 8.34	1.9230	6 45 5.9	14.807
21	9 51 15.49	2.2330	17 49 18.0	12.931	21	11 30 3.59	1.9187	6 30 17.2	14.816
22	9 53 29.21	2.2244	17 36 19.8	13.007	22	11 31 58.58	1.0144	6 15 28.0	14.824
23	9 55 42.42	2.2160	N.17 23 17.2	13.079	23	11 33 53.32	1.9102	N. 6 0 38.3	14.832
	SUNDAY 18.					TUESDAY 20.			
0	9 57 55.13	2.2076	N.17 10 10.3	13.151	0	11 35 47.81	1.9062	N. 5 45 48.2	14.838
1	10 0 7.33	2.1992	16 56 59.1	13.222	1	11 37 42.06	1.9022	5 30 57.8	14.842
2	10 2 19.03	2.1909	16 43 43.6	13.292	2	11 39 36.07	1.8982	5 16 7.1	14.846
3	10 4 30.24	2.1828	16 30 24.0	13.359	3	11 41 29.85	1.8944	5 1 16.3	14.849
4	10 6 40.96	2.1747	16 17 0.5	13.423	4	11 43 23.40	1.8908	4 46 25.3	14.851
5	10 8 51.20	2.1666	16 3 33.2	13.487	5	11 45 16.74	1.8872	4 31 34.2	14.852
6	10 11 0.95	2.1585	15 50 2.1	13.548	6	11 47 9.86	1.8836	4 16 43.0	14.852
7	10 13 10.22	2.1507	15 36 27.4	13.608	7	11 49 2.77	1.8802	4 1 51.9	14.851
8	10 15 19.03	2.1430	15 22 49.1	13.667	8	11 50 55.48	1.8768	3 47 0.9	14.849
9	10 17 27.38	2.1353	15 9 7.3	13.724	9	11 52 47.99	1.8736	3 32 10.0	14.847
10	10 19 35.27	2.1276	14 55 22.2	13.778	10	11 54 40.31	1.8705	3 17 19.3	14.843
11	10 21 42.70	2.1200	14 41 33.9	13.832	11	11 56 32.45	1.8675	3 2 28.8	14.838
12	10 23 49.67	2.1125	14 27 42.4	13.884	12	11 58 24.41	1.8645	2 47 38.7	14.833
13	10 25 56.20	2.1052	14 13 47.8	13.934	13	12 0 16.19	1.8616	2 32 48.9	14.827
14	10 28 2.30	2.0980	13 59 50.3	13.982	14	12 2 7.80	1.8588	2 17 59.5	14.819
15	10 30 7.96	2.0908	13 45 50.0	14.029	15	12 3 59.25	1.8561	2 3 10.6	14.811
16	10 32 13.19	2.0837	13 31 46.9	14.075	16	12 5 50.54	1.8535	1 48 22.2	14.802
17	10 34 18.00	2.0767	13 17 41.0	14.120	17	12 7 41.67	1.8509	1 33 34.3	14.793
18	10 36 22.39	2.0697	13 3 32.5	14.162	18	12 9 32.65	1.8485	1 18 47.0	14.782
19	10 38 26.37	2.0629	12 49 21.5	14.203	19	12 11 23.49	1.8462	1 4 0.4	14.771
20	10 40 29.94	2.0562	12 35 8.1	14.243	20	12 13 14.20	1.8440	0 49 14.5	14.758
21	10 42 33.11	2.0495	12 20 52.2	14.282	21	12 15 4.77	1.8418	0 34 29.4	14.745
22	10 44 35.88	2.0430	12 6 34.3	14.318	22	12 16 55.21	1.8397	0 19 45.1	14.732
23	10 46 38.27	2.0365	11 52 14.1	14.354	23	12 18 45.53	1.8377	N. 0 5 1.6	14.717
24	10 48 40.27	2.0302	N.11 37 51.8	14.389	24	12 20 35.74	1.8359	S. 0 9 41.0	14.702

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 20 35.74	1.8359	S. 0 9 41.0	14.709
1	12 22 25.84	1.8341	0 24 22.6	14.686
2	12 24 15.83	1.8323	0 39 3.2	14.668
3	12 26 5.71	1.8306	0 53 42.8	14.651
4	12 27 55.50	1.8291	1 8 21.3	14.632
5	12 29 45.20	1.8277	1 22 58.6	14.612
6	12 31 34.82	1.8263	1 37 34.7	14.592
7	12 33 24.36	1.8250	1 52 9.6	14.571
8	12 35 13.82	1.8237	2 6 43.2	14.550
9	12 37 3.20	1.8225	2 21 15.6	14.528
10	12 38 52.52	1.8215	2 35 46.6	14.504
11	12 40 41.78	1.8206	2 50 16.1	14.480
12	12 42 30.99	1.8197	3 4 44.2	14.456
13	12 44 20.15	1.8189	3 19 10.8	14.430
14	12 46 9.26	1.8182	3 33 35.8	14.404
15	12 47 58.33	1.8175	3 47 59.3	14.377
16	12 49 47.36	1.8169	4 2 21.1	14.349
17	12 51 36.36	1.8165	4 16 41.2	14.322
18	12 53 25.34	1.8162	4 30 59.7	14.293
19	12 55 14.30	1.8158	4 45 16.4	14.263
20	12 57 3.24	1.8155	4 59 31.3	14.233
21	12 58 52.16	1.8153	5 13 44.3	14.202
22	13 0 41.08	1.8152	5 27 55.5	14.170
23	13 2 29.99	1.8152	S. 5 42 4.7	14.138

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 4 18.90	1.8152	S. 5 56 12.0	14.105
1	13 6 7.82	1.8154	6 10 17.3	14.071
2	13 7 56.75	1.8157	6 24 20.5	14.036
3	13 9 45.70	1.8160	6 38 21.6	14.001
4	13 11 34.67	1.8164	6 52 20.6	13.965
5	13 13 23.67	1.8168	7 6 17.4	13.927
6	13 15 12.69	1.8174	7 20 11.9	13.889
7	13 17 1.75	1.8180	7 34 4.1	13.852
8	13 18 50.85	1.8186	7 47 54.1	13.814
9	13 20 39.98	1.8193	8 1 41.8	13.775
10	13 22 29.16	1.8202	8 15 27.1	13.734
11	13 24 18.40	1.8211	8 29 9.9	13.693
12	13 26 7.69	1.8222	8 42 50.3	13.652
13	13 27 57.04	1.8231	8 56 28.2	13.610
14	13 29 46.46	1.8242	9 10 3.5	13.567
15	13 31 35.94	1.8254	9 23 36.2	13.523
16	13 33 25.50	1.8266	9 37 6.3	13.479
17	13 35 15.13	1.8278	9 50 33.7	13.434
18	13 37 4.84	1.8292	10 3 58.4	13.388
19	13 38 54.64	1.8307	10 17 20.3	13.342
20	13 40 44.53	1.8322	10 30 39.4	13.295
21	13 42 34.51	1.8338	10 43 55.7	13.247
22	13 44 24.59	1.8355	10 57 9.1	13.199
23	13 46 14.77	1.8372	11 10 19.6	13.150
24	13 48 5.05	1.8389	S. 11 23 27.1	13.100

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 48 5.05	1.8389	S. 11 23 27.1	13.100
1	13 49 55.44	1.8407	11 36 31.6	13.049
2	13 51 45.95	1.8427	11 49 33.0	12.998
3	13 53 36.57	1.8447	12 2 31.3	12.946
4	13 55 27.31	1.8467	12 15 26.5	12.893
5	13 57 18.18	1.8489	12 28 18.5	12.840
6	13 59 9.18	1.8511	12 41 7.3	12.786
7	14 1 0.31	1.8533	12 53 52.8	12.731
8	14 2 51.58	1.8556	13 6 35.0	12.676
9	14 4 42.98	1.8579	13 19 13.9	12.620
10	14 6 34.52	1.8603	13 31 49.4	12.562
11	14 8 26.21	1.8628	13 44 21.4	12.504
12	14 10 18.06	1.8654	13 56 49.9	12.446
13	14 12 10.06	1.8679	14 9 14.9	12.387
14	14 14 2.21	1.8705	14 21 36.3	12.327
15	14 15 54.52	1.8732	14 33 54.1	12.267
16	14 17 47.00	1.8760	14 46 8.3	12.206
17	14 19 39.64	1.8788	14 58 18.7	12.143
18	14 21 32.45	1.8817	15 10 25.4	12.080
19	14 23 25.44	1.8847	15 22 28.3	12.016
20	14 25 18.61	1.8876	15 34 27.3	11.952
21	14 27 11.95	1.8906	15 46 22.5	11.887
22	14 29 5.48	1.8937	15 58 13.7	11.820
23	14 30 59.19	1.8968	S. 16 10 0.9	11.754

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 32 53.09	1.8999	S. 16 21 44.2	11.687
1	14 34 47.18	1.9032	16 33 23.4	11.618
2	14 36 41.47	1.9065	16 44 58.4	11.549
3	14 38 35.96	1.9098	16 56 29.3	11.480
4	14 40 30.65	1.9131	17 7 56.0	11.409
5	14 42 25.54	1.9165	17 19 18.4	11.338
6	14 44 20.63	1.9199	17 30 36.5	11.266
7	14 46 15.93	1.9235	17 41 50.3	11.193
8	14 48 11.45	1.9271	17 52 59.7	11.119
9	14 50 7.18	1.9307	18 4 4.6	11.045
10	14 52 3.13	1.9342	18 15 5.1	10.970
11	14 53 59.29	1.9378	18 26 1.0	10.894
12	14 55 55.67	1.9415	18 36 52.4	10.817
13	14 57 52.27	1.9453	18 47 39.1	10.739
14	14 59 49.10	1.9491	18 58 21.1	10.662
15	15 1 46.16	1.9529	19 8 58.5	10.583
16	15 3 43.45	1.9567	19 19 31.1	10.503
17	15 5 40.97	1.9606	19 29 58.8	10.421
18	15 7 38.72	1.9645	19 40 21.6	10.339
19	15 9 36.71	1.9684	19 50 39.5	10.257
20	15 11 34.93	1.9723	20 0 52.4	10.174
21	15 13 33.39	1.9763	20 11 0.4	10.091
22	15 15 32.09	1.9804	20 21 3.3	10.006
23	15 17 31.04	1.9845	20 31 1.0	9.919
24	15 19 30.23	1.9885	S. 20 40 53.6	9.833

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 19 30.23	1.9885	S.20 40 53.6	9.833
1	15 21 29.66	1.9926	20 50 41.0	9.746
2	15 23 29.34	1.9967	21 0 23.1	9.657
3	15 25 29.27	2.0009	21 9 59.9	9.568
4	15 27 29.45	2.0051	21 19 31.3	9.478
5	15 29 29.88	2.0092	21 28 57.3	9.388
6	15 31 30.55	2.0134	21 38 17.9	9.297
7	15 33 31.48	2.0176	21 47 33.0	9.205
8	15 35 32.66	2.0218	21 56 42.5	9.112
9	15 37 34.10	2.0261	22 5 46.4	9.018
10	15 39 35.79	2.0303	22 14 44.6	8.923
11	15 41 37.73	2.0345	22 23 37.1	8.828
12	15 43 39.93	2.0387	22 32 23.9	8.732
13	15 45 42.38	2.0430	22 41 4.9	8.634
14	15 47 45.09	2.0473	22 49 40.0	8.536
15	15 49 48.06	2.0516	22 58 9.2	8.437
16	15 51 51.29	2.0559	23 6 32.4	8.337
17	15 53 54.77	2.0602	23 14 49.6	8.237
18	15 55 58.51	2.0645	23 23 0.8	8.136
19	15 58 2.51	2.0687	23 31 5.9	8.033
20	16 0 6.76	2.0730	23 39 4.8	7.930
21	16 2 11.27	2.0773	23 46 57.5	7.827
22	16 4 16.04	2.0816	23 54 44.0	7.722
23	16 6 21.06	2.0858	S.24 2 24.1	7.616

MONDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 8 26.33	2.0900	S.24 9 57.9	7.510
1	16 10 31.86	2.0942	24 17 25.3	7.403
2	16 12 37.64	2.0984	24 24 46.3	7.296
3	16 14 43.67	2.1026	24 32 0.8	7.187
4	16 16 49.95	2.1068	24 39 8.7	7.077
5	16 18 56.49	2.1111	24 46 10.0	6.967
6	16 21 3.28	2.1153	24 53 4.7	6.856
7	16 23 10.32	2.1193	24 59 52.7	6.744
8	16 25 17.60	2.1233	25 6 33.9	6.631
9	16 27 25.12	2.1273	25 13 8.4	6.518
10	16 29 32.88	2.1314	25 19 36.1	6.404
11	16 31 40.89	2.1355	25 25 56.9	6.289
12	16 33 49.14	2.1395	25 32 10.7	6.173
13	16 35 57.63	2.1434	25 38 17.6	6.056
14	16 38 6.35	2.1473	25 44 17.5	5.939
15	16 40 15.31	2.1512	25 50 10.3	5.822
16	16 42 24.50	2.1551	25 55 56.1	5.703
17	16 44 33.92	2.1589	26 1 34.7	5.583
18	16 46 43.56	2.1626	26 7 6.1	5.463
19	16 48 53.43	2.1663	26 12 30.3	5.342
20	16 51 3.52	2.1701	26 17 47.2	5.221
21	16 53 13.84	2.1738	26 22 56.8	5.099
22	16 55 24.37	2.1773	26 27 59.1	4.977
23	16 57 35.11	2.1808	26 32 54.0	4.853
24	16 59 46.06	2.1843	S.26 37 41.4	4.728

TUESDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 59 46.06	2.1843	S.26 37 41.4	4.728
1	17 1 57.22	2.1877	26 42 21.4	4.603
2	17 4 8.58	2.1910	26 46 53.8	4.477
3	17 6 20.14	2.1944	26 51 18.7	4.352
4	17 8 31.90	2.1977	26 55 36.0	4.225
5	17 10 43.86	2.2009	26 59 45.7	4.096
6	17 12 56.01	2.2040	27 3 47.8	3.971
7	17 15 8.34	2.2071	27 7 42.2	3.842
8	17 17 20.86	2.2102	27 11 28.8	3.712
9	17 19 33.56	2.2131	27 15 7.6	3.582
10	17 21 46.43	2.2159	27 18 38.6	3.452
11	17 23 59.47	2.2187	27 22 1.8	3.321
12	17 26 12.68	2.2215	27 25 17.1	3.189
13	17 28 26.05	2.2242	27 28 24.5	3.058
14	17 30 39.58	2.2268	27 31 24.0	2.926
15	17 32 53.27	2.2294	27 34 15.6	2.793
16	17 35 7.11	2.2318	27 36 59.2	2.659
17	17 37 21.09	2.2342	27 39 34.7	2.525
18	17 39 35.21	2.2365	27 42 2.2	2.391
19	17 41 49.47	2.2387	27 44 21.6	2.256
20	17 44 3.86	2.2409	27 46 32.9	2.122
21	17 46 18.38	2.2430	27 48 36.2	1.987
22	17 48 33.02	2.2450	27 50 31.4	1.851
23	17 50 47.78	2.2469	S.27 52 18.3	1.715

WEDNESDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 53 2.65	2.2487	S.27 53 57.0	1.577
1	17 55 17.63	2.2505	27 55 27.5	1.440
2	17 57 32.71	2.2522	27 56 49.8	1.303
3	17 59 47.89	2.2538	27 58 3.9	1.166
4	18 2 3.16	2.2553	27 59 9.7	1.028
5	18 4 18.52	2.2567	28 0 7.2	0.889
6	18 6 33.96	2.2579	28 0 56.4	0.751
7	18 8 49.47	2.2592	28 1 37.3	0.613
8	18 11 5.06	2.2604	28 2 9.9	0.474
9	18 13 20.72	2.2615	28 2 34.2	0.335
10	18 15 36.44	2.2624	28 2 50.1	0.195
11	18 17 52.21	2.2633	28 2 57.6	− 0.056
12	18 20 8.03	2.2641	28 2 56.8	+ 0.083
13	18 22 23.90	2.2648	28 2 47.6	0.223
14	18 24 39.81	2.2654	28 2 30.0	0.363
15	18 26 55.75	2.2659	28 2 4.0	0.503
16	18 29 11.72	2.2664	28 1 29.6	0.643
17	18 31 27.72	2.2667	28 0 46.8	0.783
18	18 33 43.73	2.2670	27 59 55.6	0.923
19	18 35 59.76	2.2672	27 58 56.0	1.063
20	18 38 15.80	2.2673	27 57 48.0	1.204
21	18 40 31.83	2.2672	27 56 31.5	1.345
22	18 42 47.86	2.2671	27 55 6.6	1.485
23	18 45 3.88	2.2669	27 53 33.3	1.625
24	18 47 19.89	2.2667	S.27 51 51.6	1.765

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 47 19.89	2.2667	S.27 51 51.6	1.765
1	18 49 35.88	2.2663	27 50 1.5	1.905
2	18 51 51.84	2.2658	27 48 3.0	2.045
3	18 54 7.77	2.2653	27 45 56.1	2.185
4	18 56 23.67	2.2647	27 43 40.8	2.324
5	18 58 39.53	2.2639	27 41 17.2	2.463
6	19 0 55.34	2.2631	27 38 45.2	2.603
7	19 3 11.10	2.2622	27 36 4.8	2.743
8	19 5 26.80	2.2612	27 33 16.1	2.882
9	19 7 42.45	2.2602	27 30 19.0	3.021
10	19 9 58.03	2.2590	27 27 13.6	3.159
11	19 12 13.53	2.2578	27 24 0.0	3.297
12	19 14 28.96	2.2565	27 20 38.0	3.436
13	19 16 44.31	2.2551	27 17 7.7	3.573
14	19 18 59.57	2.2537	27 13 29.2	3.710
15	19 21 14.75	2.2522	27 9 42.5	3.847
16	19 23 29.83	2.2505	27 5 47.5	3.984
17	19 25 44.81	2.2488	27 1 44.4	4.120
18	19 27 59.69	2.2471	26 57 33.1	4.257
19	19 30 14.46	2.2452	26 53 13.6	4.393
20	19 32 29.11	2.2433	26 48 46.0	4.528
21	19 34 43.65	2.2413	26 44 10.3	4.663
22	19 36 58.07	2.2393	26 39 26.5	4.798
23	19 39 12.37	2.2372	S.26 34 34.6	4.932

FRIDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 41 26.53	2.2349	S.26 29 34.7	5.065
1	19 43 40.56	2.2327	26 24 26.8	5.198
2	19 45 54.45	2.2304	26 19 10.9	5.331
3	19 48 8.21	2.2281	26 13 47.1	5.463
4	19 50 21.82	2.2256	26 8 15.4	5.594
5	19 52 35.28	2.2231	26 2 35.8	5.725
6	19 54 48.59	2.2205	25 56 48.4	5.855
7	19 57 1.74	2.2179	25 50 53.2	5.985
8	19 59 14.74	2.2153	25 44 50.2	6.115
9	20 1 27.58	2.2126	25 38 39.4	6.244
10	20 3 40.25	2.2098	25 32 20.9	6.372
11	20 5 52.75	2.2070	25 25 54.7	6.500
12	20 8 5.09	2.2041	25 19 20.9	6.627
13	20 10 17.25	2.2012	25 12 39.5	6.753
14	20 12 29.23	2.1983	25 5 50.5	6.879
15	20 14 41.04	2.1953	24 58 54.0	7.004
16	20 16 52.67	2.1922	24 51 50.0	7.128
17	20 19 4.11	2.1891	24 44 38.6	7.253
18	20 21 15.36	2.1860	24 37 19.7	7.377
19	20 23 26.43	2.1829	24 29 53.4	7.499
20	20 25 37.31	2.1797	24 22 19.8	7.620
21	20 27 47.99	2.1764	24 14 39.0	7.740
22	20 29 58.48	2.1732	24 6 51.0	7.861
23	20 32 8.77	2.1699	23 58 55.7	7.981
24	20 34 18.87	2.1666	S.23 50 53.2	8.101

SATURDAY, JULY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 34 18.87	2.1666	S.23 50 53.2	8.101

PHASES OF THE MOON.

		d	h	m
☾ Last Quarter . .	June	7	1	42.9
● New Moon		13	17	51.1
☽ First Quarter		20	14	37.3
○ Full Moon		28	18	25.3

		d	h
☾ Perigee	June	13	4.3
☾ Apogee		26	1.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Saturn	W.	85° 38′ 35″	3037	87° 8′ 2″	3033	88° 37′ 34″	3030	90° 7′ 10″	3026
	Spica	W.	69 1 16	3045	70 30 33	3041	71 59 55	3038	73 29 21	3034
	Antares	W.	23 6 56	3047	24 36 11	3042	26 5 32	3038	27 34 58	3034
	Fomalhaut	E.	61 13 56	3295	59 49 39	3300	58 25 27	3305	57 1 21	3311
	α Pegasi	E.	82 38 38	3386	81 16 6	3386	79 53 34	3386	78 31 1	3386
2	Saturn	W.	97 36 25	3005	99 6 32	2999	100 36 46	2993	102 7 7	2989
	Spica	W.	80 57 48	3011	82 27 47	3006	83 57 52	3001	85 28 4	2996
	Antares	W.	35 3 30	3010	36 33 30	3005	38 3 37	2999	39 33 51	2993
	Fomalhaut	E.	50 2 46	3350	48 39 32	3362	47 16 32	3374	45 53 46	3389
	α Pegasi	E.	71 38 26	3391	70 15 59	3393	68 53 35	3395	67 31 13	3399
3	Spica	W.	93 0 52	2964	94 31 50	2957	96 2 57	2950	97 34 13	2942
	Antares	W.	47 6 53	2962	48 37 54	2954	50 9 4	2946	51 40 24	2939
	α Pegasi	E.	60 40 33	3425	59 18 45	3432	57 57 5	3441	56 35 35	3451
	α Arietis	E.	101 17 44	3018	99 47 53	3009	98 17 52	3002	96 47 42	2994
	Jupiter	E.	110 43 10	3045	109 13 53	3039	107 44 28	3030	106 14 53	3023
4	Spica	W.	105 13 6	2899	106 45 26	2891	108 17 57	2880	109 50 41	2871
	Antares	W.	59 19 35	2896	60 51 59	2887	62 24 34	2877	63 57 22	2868
	α Pegasi	E.	49 51 28	3526	48 31 33	3548	47 12 2	3572	45 52 57	3599
	α Arietis	E.	89 14 15	2950	87 43 0	2942	86 11 34	2932	84 39 56	2923
	Jupiter	E.	98 44 27	2979	97 13 48	2970	95 42 58	2960	94 11 55	2950
	Sun	E.	126 2 5	3259	124 37 6	3248	123 11 54	3238	121 46 30	3226
5	Antares	W.	71 44 41	2813	73 18 52	2801	74 53 18	2789	76 28 0	2777
	α Arietis	E.	76 58 37	2872	75 25 42	2860	73 52 32	2849	72 19 8	2838
	Jupiter	E.	86 33 20	2894	85 0 54	2883	83 28 13	2871	81 55 17	2858
	Sun	E.	114 36 3	3167	113 9 14	3154	111 42 10	3141	110 14 50	3128
6	Antares	W.	84 25 40	2711	86 2 5	2697	87 38 49	2683	89 15 52	2669
	α Aquilæ	W.	45 54 14	4753	46 54 29	4632	47 56 26	4518	49 0 2	4414
	α Arietis	E.	64 28 24	2779	62 53 29	2768	61 18 19	2756	59 42 53	2744
	Jupiter	E.	74 6 23	2791	72 31 43	2777	70 56 45	2763	69 21 28	2748
	Sun	E.	102 53 58	3056	101 24 54	3041	99 55 32	3026	98 25 51	3009
7	Antares	W.	97 26 7	2592	99 5 13	2577	100 44 40	2561	102 24 29	2544
	α Aquilæ	W.	54 39 58	3984	55 51 53	3915	57 4 58	3849	58 19 10	3786
	α Arietis	E.	51 41 44	2684	50 4 43	2673	48 27 27	2662	46 49 56	2652
	Jupiter	E.	61 20 6	2672	59 42 48	2655	58 5 8	2639	56 27 6	2623
	Sun	E.	90 52 25	2927	89 20 41	2911	87 48 36	2894	86 16 9	2876
8	α Aquilæ	W.	64 45 24	3522	66 5 24	3477	67 26 14	3434	68 47 52	3394
	Fomalhaut	W.	32 17 16	3186	33 43 42	3108	35 11 42	3036	36 41 10	2972
	α Arietis	E.	38 39 11	2611	37 0 31	2607	35 21 45	2604	33 42 56	2604
	Jupiter	E.	48 11 22	2540	46 31 5	2523	44 50 24	2507	43 9 21	2490
	Sun	E.	78 28 15	2788	76 53 31	2770	75 18 24	2751	73 42 52	2734
9	α Aquilæ	W.	75 46 50	3220	77 12 35	3192	78 38 54	3164	80 5 46	3138
	Fomalhaut	W.	44 26 40	2722	46 2 51	2683	47 39 54	2646	49 17 47	2611
	Jupiter	E.	34 38 16	2410	32 54 55	2394	31 11 11	2379	29 27 6	2365
	Sun	E.	65 39 16	2644	64 1 21	2627	62 23 3	2610	60 44 21	2593

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Saturn	W.	91° 36′ 51″	3022	93° 6′ 36″	3018	94° 36′ 27″	3014	96° 6′ 23″	3009
	Spica	W.	74 58 52	3030	76 28 28	3026	77 58 9	3021	79 27 56	3017
	Antares	W.	29 4 29	3029	30 34 6	3025	32 3 48	3020	33 33 36	3015
	Fomalhaut	E.	55 37 22	3316	54 13 30	3324	52 49 46	3332	51 26 11	3340
	α Pegasi	E.	77 8 29	3386	75 45 57	3388	74 23 25	3388	73 0 55	3389
2	Saturn	W.	103 37 34	2983	105 8 8	2977	106 38 50	2971	108 9 39	2964
	Spica	W.	86 58 22	2989	88 28 48	2984	89 59 21	2977	91 30 2	2970
	Antares	W.	41 4 12	2988	42 34 40	2981	44 5 16	2975	45 36 0	2968
	Fomalhaut	E.	44 31 17	3405	43 9 6	3423	41 47 16	3444	40 25 49	3466
	α Pegasi	E.	66 8 55	3402	64 46 41	3407	63 24 32	3412	62 2 29	3418
3	Spica	W.	99 5 39	2934	100 37 15	2926	102 9 1	2917	103 40 58	2909
	Antares	W.	53 11 53	2931	54 43 32	2923	56 15 22	2914	57 47 23	2905
	α Pegasi	E.	55 14 16	3463	53 53 10	3476	52 32 19	3490	51 11 44	3507
	α Arietis	E.	95 17 22	2985	93 46 51	2977	92 16 10	2969	90 45 18	2960
	Jupiter	E.	104 45 9	3015	103 15 15	3006	101 45 10	2997	100 14 54	2988
4	Spica	W.	111 23 37	2861	112 56 46	2850	114 30 9	2840	116 3 45	2829
	Antares	W.	65 30 22	2857	67 3 36	2847	68 37 3	2835	70 10 45	2825
	α Pegasi	E.	44 34 22	3631	43 16 21	3667	41 58 59	3708	40 42 20	3754
	α Arietis	E.	83 8 6	2912	81 36 3	2903	80 3 48	2892	78 31 19	2882
	Jupiter	E.	92 40 39	2939	91 9 10	2928	89 37 27	2918	88 5 31	2906
	Sun	E.	120 20 52	3215	118 55 1	3204	117 28 56	3192	116 2 37	3179
5	Antares	W.	78 2 58	2765	79 38 12	2751	81 13 44	2738	82 49 33	2725
	α Arietis	E.	70 45 29	2826	69 11 35	2815	67 37 27	2803	66 3 3	2792
	Jupiter	E.	80 22 4	2845	78 48 35	2831	77 14 48	2818	75 40 44	2805
	Sun	E.	108 47 14	3114	107 19 21	3100	105 51 11	3085	104 22 43	3071
6	Antares	W.	90 53 14	2654	92 30 56	2638	94 8 59	2624	95 47 22	2607
	α Aquilæ	W.	50 5 11	4315	51 11 50	4224	52 19 53	4139	53 29 17	4060
	α Arietis	E.	58 7 11	2732	56 31 13	2719	54 54 59	2707	53 18 29	2696
	Jupiter	E.	67 45 52	2733	66 9 56	2718	64 33 40	2702	62 57 3	2687
	Sun	E.	96 55 50	2994	95 25 30	2977	93 54 49	2962	92 23 48	2944
7	Antares	W.	104 4 41	2528	105 45 15	2511	107 26 13	2494	109 7 34	2478
	α Aquilæ	W.	59 34 27	3727	60 50 45	3672	62 8 2	3619	63 26 16	3569
	α Arietis	E.	45 12 12	2642	43 34 14	2633	41 56 4	2624	40 17 42	2618
	Jupiter	E.	54 48 42	2607	53 9 56	2590	51 30 47	2574	49 51 16	2557
	Sun	E.	84 43 20	2659	83 10 8	2641	81 36 33	2624	80 2 36	2605
8	α Aquilæ	W.	70 10 15	3356	71 33 22	3319	72 57 12	3284	74 21 42	3252
	Fomalhaut	W.	38 11 58	2913	39 44 0	2859	41 17 11	2810	42 51 26	2765
	α Arietis	E.	32 4 6	2607	30 25 20	2613	28 46 43	2624	27 8 21	2640
	Jupiter	E.	41 27 54	2474	39 46 4	2458	38 3 51	2441	36 21 15	2425
	Sun	E.	72 6 57	2715	70 30 37	2696	68 53 54	2680	67 16 47	2662
9	α Aquilæ	W.	81 33 9	3114	83 1 2	3091	84 29 22	3070	85 58 8	3051
	Fomalhaut	W.	50 56 27	2578	52 35 52	2547	54 16 0	2517	55 56 49	2490
	Jupiter	E.	27 42 41	2351	25 57 56	2338	24 12 52	2326	22 27 30	2315
	Sun	E.	59 5 16	2576	57 25 48	2559	55 45 57	2543	54 5 43	2527

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	α Aquilæ	W.	87° 27′ 18″	3033	88° 56′ 50″	3017	90° 26′ 42″	3002	91° 56′ 52″	2990
	Fomalhaut	W.	57 38 16	2464	59 20 20	2438	61 3 0	2415	62 46 13	2393
	α Pegasi	W.	39 43 0	3108	41 11 0	3029	42 40 37	2958	44 11 43	2892
	Sun	E.	52 25 7	2512	50 44 10	2496	49 2 51	2482	47 21 12	2467
11	Fomalhaut	W.	71 29 45	2299	73 15 46	2283	75 2 11	2268	76 48 57	2255
	α Pegasi	W.	52 5 48	2645	53 43 42	2607	55 22 27	2572	57 2 0	2541
	Sun	E.	38 48 17	2407	37 4 52	2398	35 21 14	2392	33 37 28	2381
15	Sun	W.	18 27 47	2456	20 10 2	2452	21 52 23	2452	23 34 44	2454
	Regulus	E.	46 7 53	2078	44 16 20	2091	42 25 7	2104	40 34 14	2118
	Saturn	E.	83 30 44	2062	81 38 46	2074	79 47 7	2086	77 55 46	2098
	Spica	E.	100 7 38	2062	98 15 41	2073	96 24 1	2085	94 32 39	2096
16	Sun	W.	32 4 33	2498	33 45 49	2512	35 26 46	2525	37 7 24	2540
	Saturn	E.	68 43 58	2168	66 54 42	2183	65 5 49	2199	63 17 20	2215
	Spica	E.	85 20 48	2167	83 31 31	2182	81 42 37	2198	79 54 6	2214
17	Sun	W.	45 25 8	2623	47 3 32	2641	48 41 31	2660	50 19 5	2678
	Venus	W.	33 0 20	2723	34 36 29	2740	36 12 16	2758	37 47 39	2775
	Saturn	E.	54 21 7	2301	52 35 9	2320	50 49 38	2337	49 4 33	2356
	Spica	E.	70 57 46	2300	69 11 47	2318	67 26 14	2337	65 41 8	2355
18	Sun	W.	58 20 35	2775	59 55 36	2794	61 30 12	2814	63 4 22	2834
	Venus	W.	45 38 32	2871	47 11 28	2891	48 43 59	2910	50 16 5	2929
	Pollux	W.	33 48 45	2448	35 31 11	2466	37 13 12	2485	38 54 47	2502
	Saturn	E.	40 25 49	2449	38 43 24	2468	37 1 26	2487	35 19 54	2505
	Spica	E.	57 2 16	2448	55 19 50	2467	53 37 50	2486	51 56 17	2505
	Antares	E.	102 55 1	2443	101 12 28	2462	99 30 22	2481	97 48 42	2499
19	Sun	W.	70 48 52	2931	72 20 32	2950	73 51 48	2969	75 22 40	2987
	Venus	W.	57 50 24	3028	59 20 2	3047	60 49 17	3066	62 18 8	3085
	Pollux	W.	47 16 23	2593	48 55 28	2611	50 34 8	2629	52 12 24	2646
	Spica	E.	43 35 6	2599	41 56 9	2617	40 17 37	2635	38 39 30	2653
	Antares	E.	89 26 48	2591	87 47 40	2609	86 8 57	2626	84 30 38	2644
20	Sun	W.	82 51 17	3078	84 19 54	3094	85 48 11	3111	87 16 7	3128
	Venus	W.	69 36 44	3176	71 3 22	3193	72 29 39	3210	73 55 36	3227
	Pollux	W.	60 18 1	2729	61 54 2	2744	63 29 43	2760	65 5 3	2775
	Regulus	W.	23 55 51	2783	25 30 41	2794	27 5 17	2805	28 39 39	2815
	Antares	E.	76 24 50	2728	74 48 47	2744	73 13 5	2760	71 37 44	2774
21	Sun	W.	94 30 56	3205	95 56 59	3220	97 22 45	3233	98 48 15	3247
	Venus	W.	81 0 33	3305	82 24 39	3319	83 48 28	3334	85 12 0	3347
	Pollux	W.	72 56 54	2846	74 30 22	2859	76 3 33	2872	77 36 28	2884
	Regulus	W.	36 27 56	2872	38 0 51	2883	39 33 32	2894	41 5 58	2905
	Antares	E.	63 45 47	2845	62 12 18	2859	60 39 6	2872	59 6 11	2883
22	Sun	W.	105 51 55	3308	107 15 57	3319	108 39 46	3330	110 3 23	3341
	Venus	W.	92 5 57	3409	93 28 3	3421	94 49 56	3431	96 11 37	3441
	Pollux	W.	85 17 15	2940	86 48 43	2950	88 19 58	2960	89 51 1	2969
	Regulus	W.	48 44 49	2956	50 15 57	2965	51 46 54	2974	53 17 39	2982

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
10	α Aquilæ	W.	93° 27′ 17″	2979	94° 57′ 56″	2971	96° 28′ 45″	2964	97° 59′ 43″	2958
	Fomalhaut	W.	64 29 58	2372	66 14 13	2352	67 58 57	2333	69 44 8	2315
	α Pegasi	W.	45 44 12	2833	47 17 57	2780	48 52 51	2731	50 28 50	2687
	Sun	E.	45 39 13	2455	43 56 56	2441	42 14 20	2429	40 31 27	2417
11	Fomalhaut	W.	78 36 3	2343	80 23 27	2331	82 11 9	2320	83 59 6	2311
	α Pegasi	W.	58 42 16	2512	60 23 13	2486	62 4 46	2462	63 46 53	2439
	Sun	E.	31 53 21	2374	30 9 9	2369	28 24 50	2367	26 40 28	2365
15	Sun	W.	25 17 2	2459	26 59 13	2467	28 41 13	2476	30 23 0	2486
	Regulus	E.	38 43 42	2133	36 53 33	2149	35 3 49	2166	33 14 30	2182
	Saturn	E.	76 4 43	2111	74 14 0	2124	72 23 38	2138	70 33 37	2153
	Spica	E.	92 41 36	2111	90 50 53	2124	89 0 30	2137	87 10 28	2152
16	Sun	W.	38 47 41	2556	40 27 37	2572	42 7 10	2588	43 46 21	2606
	Saturn	E.	61 29 15	2932	59 41 35	2949	57 54 20	2966	56 7 31	2983
	Spica	E.	78 6 0	2931	76 18 18	2948	74 31 2	2965	72 44 11	2983
17	Sun	W.	51 56 14	2697	53 32 58	2716	55 9 16	2736	56 45 8	2755
	Venus	W.	39 22 39	2795	40 57 14	2813	42 31 25	2832	44 5 11	2852
	Saturn	E.	47 19 55	2375	45 35 44	2393	43 51 59	2412	42 8 41	2430
	Spica	E.	63 56 28	2373	62 12 15	2392	60 28 29	2410	58 45 9	2429
18	Sun	W.	64 38 6	2853	66 11 25	2873	67 44 19	2892	69 16 48	2911
	Venus	W.	51 47 47	2950	53 19 3	2969	54 49 55	2989	56 20 22	3009
	Pollux	W.	40 35 57	2521	42 16 41	2539	43 57 0	2557	45 36 54	2575
	Saturn	E.	33 38 48	2525	31 58 9	2543	30 17 55	2561	28 38 7	2579
	Spica	E.	50 15 11	2524	48 34 31	2543	46 54 17	2561	45 14 29	2579
	Antares	E.	96 7 28	2518	94 26 40	2536	92 46 17	2555	91 6 20	2571
19	Sun	W.	76 53 9	3005	78 23 15	3024	79 52 58	3043	81 22 18	3062
	Venus	W.	63 46 36	3104	65 14 41	3122	66 42 24	3140	68 9 45	3158
	Pollux	W.	53 50 17	2663	55 27 47	2680	57 4 54	2697	58 41 38	2713
	Spica	E.	37 1 47	2671	35 24 28	2689	33 47 34	2707	32 11 4	2725
	Antares	E.	82 52 43	2661	81 15 11	2678	79 38 2	2695	78 1 15	2711
20	Sun	W.	88 43 43	3143	90 11 0	3160	91 37 57	3175	93 4 36	3191
	Venus	W.	75 21 13	3243	76 46 31	3259	78 11 30	3276	79 36 10	3290
	Pollux	W.	66 40 3	2791	68 14 43	2805	69 49 5	2819	71 23 8	2832
	Regulus	W.	30 13 47	2826	31 47 41	2837	33 21 21	2848	34 54 46	2860
	Antares	E.	70 2 42	2789	68 28 0	2804	66 53 37	2818	65 19 33	2832
21	Sun	W.	100 13 29	3259	101 38 28	3273	103 3 11	3285	104 27 40	3297
	Venus	W.	86 35 17	3361	87 58 18	3373	89 21 5	3386	90 43 38	3398
	Pollux	W.	79 9 7	2897	80 41 30	2908	82 13 39	2919	83 45 34	2930
	Regulus	W.	42 38 11	2916	44 10 10	2926	45 41 56	2936	47 13 29	2946
	Antares	E.	57 33 31	2896	56 1 7	2907	54 28 57	2919	52 57 2	2930
22	Sun	W.	111 26 47	3351	112 50 0	3360	114 13 2	3369	115 35 54	3378
	Venus	W.	97 33 7	3451	98 54 26	3461	100 15 34	3470	101 36 32	3478
	Pollux	W	91 21 53	2977	92 52 34	2986	94 23 4	2994	95 53 24	3001
	Regulus	W.	54 48 14	2990	56 18 39	2998	57 48 54	3006	59 19 0	3014

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
22	Antares	E.	51° 25′ 21″	2940	49° 53′ 53″	2950	48° 22′ 38″	2960	46° 51′ 35″	2969
	α Aquilæ	E.	101 2 56	3807	99 48 1	3810	98 33 9	3813	97 18 19	3816
23	SUN	W.	116 58 36	3386	118 21 9	3394	119 43 32	3401	121 5 47	3408
	VENUS	W.	102 57 21	3486	104 18 1	3493	105 38 33	3501	106 58 56	3507
	Regulus	W.	60 48 56	3090	62 18 44	3096	63 48 24	3032	65 17 57	3038
	SATURN	W.	23 5 30	3019	24 35 19	3025	26 5 1	3031	27 34 35	3037
	Antares	E.	39 19 2	3009	37 49 1	3016	36 19 8	3023	34 49 24	3029
	α Aquilæ	E.	91 5 14	3841	89 50 54	3848	88 36 41	3855	87 22 35	3863
24	Regulus	W.	72 44 5	3061	74 13 2	3065	75 41 55	3068	77 10 44	3071
	SATURN	W.	35 0 44	3062	36 29 40	3065	37 58 32	3069	39 27 20	3072
	Spica	W.	18 42 56	3084	20 11 25	3085	21 39 53	3085	23 8 21	3085
	α Aquilæ	E.	81 14 21	3912	80 1 13	3923	78 48 17	3935	77 35 33	3948
25	Regulus	W.	84 34 1	3081	86 2 34	3082	87 31 5	3082	88 59 36	3083
	SATURN	W.	46 50 30	3082	48 19 1	3084	49 47 30	3085	51 15 58	3085
	Spica	W.	30 30 41	3085	31 59 9	3086	33 27 36	3086	34 56 3	3085
	α Aquilæ	E.	71 35 28	4028	70 24 16	4046	69 13 22	4067	68 2 48	4088
	Fomalhaut	E.	98 0 21	3269	96 35 33	3268	95 10 44	3269	93 45 56	3268
26	Regulus	W.	96 22 6	3082	97 50 38	3081	99 19 11	3080	100 47 45	3078
	SATURN	W.	58 38 16	3084	60 6 45	3082	61 35 16	3082	63 3 48	3081
	Spica	W.	42 18 32	3080	43 47 6	3079	45 15 41	3077	46 44 19	3075
	α Aquilæ	E.	62 15 39	4220	61 7 32	4252	59 59 55	4288	58 52 51	4325
	Fomalhaut	E.	86 41 51	3267	85 17 1	3267	83 52 11	3267	82 27 21	3267
	α Pegasi	E.	107 21 16	3440	105 59 45	3433	104 38 6	3427	103 16 20	3421
27	SATURN	W.	70 26 59	3069	71 55 46	3067	73 24 36	3064	74 53 30	3061
	Spica	W.	54 8 6	3063	55 37 1	3060	57 5 59	3056	58 35 2	3053
	α Aquilæ	E.	53 26 57	4560	52 23 58	4621	51 21 51	4685	50 20 39	4756
	Fomalhaut	E.	75 23 10	3267	73 58 20	3268	72 33 31	3268	71 8 42	3269
	α Pegasi	E.	96 25 55	3395	95 3 33	3391	93 41 6	3386	92 18 34	3382
28	SATURN	W.	82 19 0	3043	83 48 20	3039	85 17 45	3034	86 47 16	3030
	Spica	W.	66 1 22	3034	67 30 53	3030	69 0 29	3026	70 30 10	3021
	Antares	W.	20 7 3	3036	21 36 31	3032	23 6 4	3027	24 35 43	3022
	Fomalhaut	E.	64 4 56	3276	62 40 17	3279	61 15 41	3282	59 51 9	3286
	α Pegasi	E.	85 24 51	3366	84 1 56	3364	82 38 58	3362	81 15 58	3360
29	SATURN	W.	94 16 16	3005	95 46 22	3000	97 16 35	2995	98 46 54	2989
	Spica	W.	78 0 6	2996	79 30 24	2990	81 0 49	2985	82 31 21	2979
	Antares	W.	32 5 38	2995	33 35 57	2989	35 6 23	2984	36 36 56	2977
	Fomalhaut	E.	52 49 46	3314	51 25 51	3323	50 2 6	3333	48 38 33	3344
	α Pegasi	E.	74 20 34	3357	72 57 28	3357	71 34 22	3358	70 11 17	3359
30	SATURN	W.	106 20 20	2959	107 51 24	2953	109 22 36	2946	110 53 56	2940
	Spica	W.	90 5 49	2950	91 37 5	2942	93 8 30	2936	94 40 3	2930
	Antares	W.	44 11 34	2947	45 42 53	2941	47 14 20	2935	48 45 55	2927
	Fomalhaut	E.	41 44 39	3430	40 22 56	3454	39 1 41	3483	37 40 58	3515
	α Pegasi	E.	63 16 34	3377	61 53 51	3383	60 31 15	3390	59 8 47	3398
	α Arietis	E.	104 10 5	3003	102 39 56	2996	101 9 38	2989	99 39 11	2981

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
22	Antares	E.	45° 20′ 43″	2977	43° 50′ 2″	2986	42° 19′ 32″	2994	40° 49′ 12″	3002
	α Aquilæ	E.	96 3 33	3820	94 48 51	3823	93 34 13	3829	92 19 41	3834
23	Sun	W.	122 27 54	3415	123 49 53	3422	125 11 45	3428	126 33 30	3433
	Venus	W.	108 19 12	3514	109 39 21	3520	110 59 23	3525	112 19 19	3531
	Regulus	W.	66 47 23	3043	68 16 42	3048	69 45 55	3052	71 15 3	3057
	Saturn	W.	29 4 2	3043	30 33 22	3048	32 2 35	3053	33 31 42	3057
	Antares	E.	33 19 47	3035	31 50 18	3040	30 20 55	3046	28 51 39	3050
	α Aquilæ	E.	86 8 38	3871	84 54 49	3881	83 41 10	3890	82 27 40	3901
24	Regulus	W.	78 39 29	3073	80 8 11	3076	81 36 50	3078	83 5 27	3080
	Saturn	W.	40 56 4	3075	42 24 44	3077	43 53 22	3079	45 21 57	3081
	Spica	W.	24 36 49	3085	26 5 17	3085	27 33 45	3085	29 2 13	3085
	α Aquilæ	E.	76 23 2	3962	75 10 45	3978	73 58 44	3993	72 46 58	4010
25	Regulus	W.	90 28 6	3083	91 56 36	3084	93 25 5	3083	94 53 35	3082
	Saturn	W.	52 44 26	3086	54 12 53	3086	55 41 20	3085	57 9 48	3085
	Spica	W.	36 24 31	3085	37 52 59	3083	39 21 29	3082	40 50 0	3082
	α Aquilæ	E.	66 52 35	4111	65 42 44	4136	64 33 17	4162	63 24 15	4189
	Fomalhaut	E.	92 21 7	3968	90 56 18	3968	89 31 29	3968	88 6 40	3968
26	Regulus	W.	102 16 21	3077	103 44 59	3074	105 13 40	3073	106 42 23	3071
	Saturn	W.	64 32 21	3078	66 0 57	3077	67 29 35	3074	68 58 16	3073
	Spica	W.	48 12 59	3073	49 41 42	3071	51 10 27	3069	52 39 15	3066
	α Aquilæ	E.	57 46 21	4365	56 40 28	4409	55 35 15	4456	54 30 44	4506
	Fomalhaut	E.	81 2 31	3966	79 37 40	3967	78 12 50	3967	76 48 0	3967
	α Pegasi	E.	101 54 27	3415	100 32 28	3410	99 10 23	3405	97 48 12	3400
27	Saturn	W.	76 22 27	3057	77 51 29	3054	79 20 35	3051	80 49 45	3047
	Spica	W.	60 4 9	3050	61 33 20	3046	63 2 36	3042	64 31 57	3039
	α Aquilæ	E.	49 20 26	4839	48 21 16	4916	47 23 14	5007	46 26 24	5106
	Fomalhaut	E.	69 43 54	3970	68 19 7	3970	66 54 21	3972	65 29 37	3975
	α Pegasi	E.	90 55 57	3379	89 33 16	3375	88 10 31	3372	86 47 43	3369
28	Saturn	W.	88 16 52	3025	89 46 34	3020	91 16 22	3015	92 46 16	3010
	Spica	W.	71 59 57	3016	73 29 50	3011	74 59 49	3006	76 29 54	3001
	Antares	W.	26 5 29	3017	27 35 21	3011	29 5 20	3005	30 35 26	3001
	Fomalhaut	E.	58 26 41	3290	57 2 18	3295	55 38 1	3300	54 13 50	3306
	α Pegasi	E.	79 52 56	3360	78 29 52	3358	77 6 47	3357	75 43 41	3356
29	Saturn	W.	100 17 21	2983	101 47 55	2977	103 18 36	2972	104 49 24	2965
	Spica	W.	84 2 0	2973	85 32 46	2968	87 3 39	2962	88 34 40	2955
	Antares	W.	38 7 37	2972	39 38 25	2966	41 9 20	2960	42 40 23	2954
	Fomalhaut	E.	47 15 12	3357	45 52 6	3372	44 29 17	3388	43 6 47	3406
	α Pegasi	E.	68 48 14	3361	67 25 13	3365	66 2 16	3368	64 39 23	3372
30	Saturn	W.	112 25 24	2934	113 57 0	2927	115 28 45	2920	117 0 39	2912
	Spica	W.	96 11 44	2923	97 43 34	2916	99 15 32	2909	100 47 40	2902
	Antares	W.	50 17 39	2920	51 49 32	2914	53 21 33	2907	54 53 43	2900
	Fomalhaut	E.	36 20 51	3554	35 1 26	3598	33 42 49	3649	32 25 7	3708
	α Pegasi	E.	57 46 28	3406	56 24 20	3418	55 2 24	3431	53 40 43	3445
	α Arietis	E.	98 8 35	2974	96 37 50	2967	95 6 56	2960	93 35 53	2952

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	6 42 40.86	10.333	N.23 5 32.6	−10.53	15 46.18	68.76	3 37.29	0.475
SUN.	2	6 46 48.72	10.322	23 1 7.7	11.54	15 46.17	68.72	3 48.57	0.464
Mon.	3	6 50 56.32	10.310	22 56 18.7	12.54	15 46.16	68.68	3 59.57	0.452
Tues.	4	6 55 3.64	10.298	22 51 5.7	−13.54	15 46.16	68.64	4 10.29	0.440
Wed.	5	6 59 10.64	10.285	22 45 28.9	14.53	15 46.17	68.59	4 20.71	0.427
Thur.	6	7 3 17.32	10.271	22 39 28.4	15.51	15 46.18	68.54	4 30.80	0.413
Frid.	7	7 7 23.66	10.256	22 33 4.2	−16.50	15 46.19	68.49	4 40.55	0.399
Sat.	8	7 11 29.62	10.241	22 26 16.6	17.47	15 46.20	68.43	4 49.94	0.383
SUN.	9	7 15 35.21	10.224	22 19 5.7	18.44	15 46.23	68.38	4 58.94	0.367
Mon.	10	7 19 40.39	10.207	22 11 31.7	−19.40	15 46.25	68.32	5 7.54	0.350
Tues.	11	7 23 45.15	10.189	22 3 34.6	20.35	15 46.28	68.26	5 15.72	0.332
Wed.	12	7 27 49.47	10.171	21 55 14.8	21.30	15 46.32	68.19	5 23.46	0.313
Thur.	13	7 31 53.34	10.151	21 46 32.4	−22.23	15 46.37	68.13	5 30.76	0.294
Frid.	14	7 35 56.72	10.131	21 37 27.6	23.16	15 46.42	68.06	5 37.56	0.273
Sat.	15	7 39 59.60	10.109	21 28 0.7	24.08	15 46.47	67.99	5 43.86	0.252
SUN.	16	7 44 1.97	10.088	21 18 11.8	−24.99	15 46.53	67.92	5 49.65	0.230
Mon.	17	7 48 3.81	10.065	21 8 1.2	25.89	15 46.60	67.84	5 54.92	0.208
Tues.	18	7 52 5.10	10.042	20 57 29.1	26.78	15 46.67	67.77	5 59.65	0.185
Wed.	19	7 56 5.83	10.018	20 46 35.7	−27.66	15 46.75	67.69	6 3.81	0.161
Thur.	20	8 0 6.00	9.995	20 35 21.4	28.53	15 46.83	67.61	6 7.40	0.138
Frid.	21	8 4 5.59	9.970	20 23 46.4	29.38	15 46.91	67.53	6 10.42	0.114
Sat.	22	8 8 4.57	9.945	20 11 51.0	−30.23	15 47.00	67.45	6 12.85	0.089
SUN.	23	8 12 2.97	9.921	19 59 35.3	31.05	15 47.10	67.37	6 14.69	0.064
Mon.	24	8 16 0.77	9.896	19 46 59.7	31.89	15 47.20	67.29	6 15.92	0.039
Tues.	25	8 19 57.97	9.871	19 34 4.5	−32.71	15 47.30	67.21	6 16.56	0.014
Wed.	26	8 23 54.57	9.846	19 20 49.8	33.51	15 47.40	67.12	6 16.60	0.011
Thur.	27	8 27 50.56	9.820	19 7 15.9	34.30	15 47.51	67.04	6 16.04	0.036
Frid.	28	8 31 45.94	9.795	18 53 23.2	−35.08	15 47.62	66.95	6 14.86	0.061
Sat.	29	8 35 40.72	9.770	18 39 11.9	35.85	15 47.73	66.87	6 13.09	0.086
SUN.	30	8 39 34.90	9.745	18 24 42.2	36.61	15 47.85	66.78	6 10.73	0.111
Mon.	31	8 43 28.48	9.721	18 9 54.4	37.36	15 47.97	66.69	6 7.76	0.136
Tues.	32	8 47 21.47	9.696	N. 17 54 48.8	−38.10	15 48.09	66.61	6 4.19	0.161

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^{s}.18$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	6 42 40.24	10.332	N. 23 5 33.2	−10.53	3 37.26	0.475	6 39 2.98
SUN.	2	6 46 48.08	10.321	23 1 8.4	11.54	3 48.54	0.464	6 42 59.54
Mon.	3	6 50 55.64	10.309	22 56 19.5	12.54	3 59.54	0.452	6 46 56.10
Tues.	4	6 55 2.92	10.297	22 51 6.7	−13.53	4 10.26	0.440	6 50 52.66
Wed.	5	6 59 9.90	10.284	22 45 30.0	14.52	4 20.68	0.427	6 54 49.22
Thur.	6	7 3 16.55	10.270	22 39 29.5	15.51	4 30.77	0.413	6 58 45.78
Frid.	7	7 7 22.86	10.256	22 33 5.5	−16.49	4 40.52	0.399	7 2 42.34
Sat.	8	7 11 28.80	10.240	22 26 18.0	17.46	4 49.91	0.383	7 6 38.89
SUN.	9	7 15 34.36	10.223	22 19 7.2	18.43	4 58.91	0.367	7 10 35.45
Mon.	10	7 19 39.52	10.206	22 11 33.3	−19.39	5 7.51	0.350	7 14 32.01
Tues.	11	7 23 44.26	10.188	22 3 36.4	20.35	5 15.69	0.332	7 18 28.57
Wed.	12	7 27 48.56	10.170	21 55 16.7	21.29	5 23.43	0.313	7 22 25.13
Thur.	13	7 31 52.41	10.150	21 46 34.5	−22.23	5 30.73	0.294	7 26 21.68
Frid.	14	7 35 55.77	10.130	21 37 29.8	23.16	5 37.53	0.273	7 30 18.24
Sat.	15	7 39 58.64	10.109	21 28 2.9	24.08	5 43.84	0.252	7 34 14.80
SUN.	16	7 44 0.99	10.087	21 18 14.1	−24.99	5 49.63	0.230	7 38 11.36
Mon.	17	7 48 2.82	10.065	21 8 3.7	25.88	5 54.90	0.208	7 42 7.92
Tues.	18	7 52 4.10	10.042	20 57 31.7	26.77	5 59.63	0.185	7 46 4.47
Wed.	19	7 56 4.82	10.018	20 46 38.5	−27.65	6 3.79	0.162	7 50 1.03
Thur.	20	8 0 4.98	9.994	20 35 24.3	28.52	6 7.39	0.138	7 53 57.59
Frid.	21	8 4 4.56	9.970	20 23 49.4	29.38	6 10.41	0.114	7 57 54.15
Sat.	22	8 8 3.54	9.946	20 11 54.1	−30.23	6 12.84	0.089	8 1 50.70
SUN.	23	8 12 1.94	9.921	19 59 38.5	31.06	6 14.68	0.064	8 5 47.26
Mon.	24	8 15 59.74	9.896	19 47 3.0	31.89	6 15.92	0.039	8 9 43.82
Tues.	25	8 19 56.94	9.871	19 34 7.8	−32.70	6 16.56	0.014	8 13 40.38
Wed.	26	8 23 53.54	9.846	19 20 53.2	33.51	6 16.60	0.011	8 17 36.94
Thur.	27	8 27 49.53	9.820	19 7 19.5	34.30	6 16.04	0.036	8 21 33.49
Frid.	28	8 31 44.92	9.795	18 53 26.9	−35.08	6 14.87	0.061	8 25 30.05
Sat.	29	8 35 39.71	9.770	18 39 15.6	35.85	6 13.10	0.086	8 29 26.61
SUN.	30	8 39 33.90	9.745	18 24 45.9	36.61	6 10.74	0.111	8 33 23.16
Mon.	31	8 43 27.49	9.721	18 9 58.2	37.36	6 7.77	0.136	8 37 19.72
Tues.	32	8 47 20.49	9.696	N. 17 54 52.6	−38.10	6 4.21	0.160	8 41 16.28

Note.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign − prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE.		THE SUN'S Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	182	99 48 34.8	48 16.4	142.95	− 0.49	0.0072026	+ 1.8	17 18 6.48
2	183	100 45 45.5	45 26.9	142.95	0.44	0.0072062	1.2	17 14 10.57
3	184	101 42 56.5	42 37.8	142.96	0.37	0.0072082	+ 0.4	17 10 14.66
4	185	102 40 7.8	39 48.9	142.98	− 0.27	0.0072085	− 0.2	17 6 18.74
5	186	103 37 19.4	37 0.3	142.99	0.15	0.0072070	1.0	17 2 22.83
6	187	104 34 31.4	34 12.1	143.01	− 0.02	0.0072036	1.8	16 58 26.92
7	188	105 31 43.8	31 24.3	143.02	+ 0.11	0.0071982	− 2.7	16 54 31.00
8	189	106 28 56.5	28 36.8	143.04	0.24	0.0071906	3.7	16 50 35.10
9	190	107 26 9.6	25 49.7	143.06	0.36	0.0071806	4.7	16 46 39.18
10	191	108 23 23.2	23 3.1	143.08	+ 0.47	0.0071681	− 5.7	16 42 43.27
11	192	109 20 37.2	20 17.0	143.09	0.55	0.0071532	6.7	16 38 47.35
12	193	110 17 51.6	17 31.2	143.12	0.61	0.0071358	7.8	16 34 51.44
13	194	111 15 6.4	14 45.8	143.14	+ 0.64	0.0071158	− 8.9	16 30 55.54
14	195	112 12 21.6	12 0.8	143.15	0.63	0.0070931	9.9	16 26 59.62
15	196	113 9 37.1	9 16.1	143.16	0.59	0.0070677	11.1	16 23 3.71
16	197	114 6 52.9	6 31.8	143.16	+ 0.53	0.0070397	−12.2	16 19 7.79
17	198	115 4 9.0	3 47.7	143.18	0.45	0.0070093	13.2	16 15 11.68
18	199	116 1 25.4	1 3.9	143.19	0.35	0.0069765	14.2	16 11 15.98
19	200	116 58 42.1	58 20.4	143.20	+ 0.22	0.0069413	−15.1	16 7 20.06
20	201	117 55 59.0	55 37.1	143.21	+ 0.08	0.0069039	16.0	16 3 24.15
21	202	118 53 16.2	52 54.2	143.22	− 0.05	0.0068644	16.9	15 59 28.23
22	203	119 50 33.7	50 11.5	143.24	− 0.17	0.0068230	−17.6	15 55 32.33
23	204	120 47 51.5	47 29.1	143.25	0.29	0.0067798	18.4	15 51 36.41
24	205	121 45 9.8	44 47.3	143.27	0.39	0.0067350	19.0	15 47 40.50
25	206	122 42 28.6	42 5.9	143.29	− 0.46	0.0066887	−19.6	15 43 44.59
26	207	123 39 47.9	39 25.0	143.32	0.50	0.0066410	20.1	15 39 48.67
27	208	124 37 7.8	36 44.8	143.34	0.52	0.0065920	20.7	15 35 52 76
28	209	125 34 28.4	34 5.2	143.38	− 0.50	0.0065416	− 21.3	15 31 56.86
29	210	126 31 49.8	31 26.4	143.41	0.46	0.0064899	21.8	15 28 0.94
30	211	127 29 12.2	28 48.6	143.45	0.39	0.0064369	22.4	15 24 5.04
31	212	128 26 35.5	26 11.8	143.49	0.29	0.0063826	22.9	15 20 9.12
32	213	129 23 59.9	23 36.0	143.54	− 0.17	0.0063270	− 23.5	15 16 13.21

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 2.7	15 6.2	55 6.2	+1.02	55 19.0	+1.11	14 23.7	2.02	17.3
2	15 9.9	15 14.0	55 32.8	1.20	55 47.7	1.29	15 11.1	1.93	18.3
3	15 18.3	15 23.3	56 3.7	1.38	56 20.7	1.46	15 56.6	1.67	19.3
4	15 27.9	15 33.0	56 38.7	+1.54	56 57.6	+1.62	16 41.0	1.84	20.3
5	15 38.4	15 44.1	57 17.5	1.69	57 38.1	1.74	17 25.5	1.87	21.3
6	15 49.8	15 55.7	57 59.3	1.78	58 20.9	1.80	18 11.3	1.96	22.3
7	16 1.6	16 7.4	58 42.5	+1.78	59 3.7	+1.74	19 0.0	2.11	23.3
8	16 13.0	16 18.2	59 24.3	1.67	59 43.7	1.54	19 53.1	2.32	24.3
9	16 23.0	16 27.3	60 1.3	1.38	60 16.8	1.18	20 51.4	2.54	25.3
10	16 30.7	16 33.3	60 29.5	+0.93	60 39.1	+0.65	21 54.9	2.73	26.3
11	16 34.9	16 35.5	60 45.0	+0.33	60 46.9	−0.01	23 1.3	2.79	27.3
12	16 34.9	16 33.1	60 44.7	−0.36	60 38.3	0.70	6		28.3
13	16 30.3	16 26.4	60 27.8	−1.03	60 13.5	−1.34	0 7.3	2.69	29 3
14	16 21.5	16 15.8	59 55.6	1.62	59 34.7	1.84	1 9.4	2.48	1.0
15	16 9.5	16 2.6	59 11.4	2.02	58 46.2	2.15	2 5.9	2.23	2 0
16	15 55.4	15 48.1	58 19.8	−2.23	57 52.8	−2.25	2 56.9	2.02	3.0
17	15 40.7	15 33.5	57 25.8	2.23	56 59.2	2.18	3 43.4	1.87	4.0
18	15 26.5	15 19.9	56 33.6	2.08	56 9.4	1.94	4 26.9	1.77	5.0
19	15 13.8	15 8.2	55 47.0	−1.78	55 26.5	−1.62	5 8.9	1.73	6.0
20	15 3.2	14 58.9	55 8.2	1.43	54 52.2	1.23	5 50.5	1.74	7.0
21	14 55.2	14 52.2	54 38.6	1.03	54 27.6	0.82	6 33.0	1.80	8.0
22	14 49.8	14 48.2	54 19.0	−0.62	54 12.8	−0.42	7 17.3	1.89	9.0
23	14 47.1	14 46.7	54 9.0	−0.22	54 7.5	−0.03	8 4.0	2.00	10.0
24	14 46.9	14 47.6	54 8.2	+0.14	54 10.9	+0.30	8 53.3	2.10	11.0
25	14 48.9	14 50.6	54 15.5	+0.45	54 21.8	+0.59	9 44.6	2.17	12.0
26	14 52.8	14 55.3	54 29.7	0.71	54 38.9	0.82	10 37.0	2.19	13.0
27	14 58.1	15 1.3	54 49.4	0.92	55 0.9	0.99	11 29.2	2.15	14.0
28	15 4.6	15 8.2	55 13.2	+1.06	55 26.3	+1.11	12 19.9	2.07	15.0
29	15 11.9	15 15.7	55 39.9	1.16	55 54.1	1.20	13 8.4	1.98	16.0
30	15 19.7	15 23.7	56 8.6	1.22	56 23.3	1.24	13 55.0	1.90	17.0
31	15 27.8	15 31.9	56 38.3	1.26	56 53.5	1.27	14 39.9	1.86	18.0
32	15 36.1	15 40.2	57 8.8	+1.28	57 24.1	+1.28	15 24.3	1.85	19.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 34 18.87	2.1666	S. 23 50 53.2	8.101
1	20 36 28.77	2.1633	23 42 43.6	8.218
2	20 38 38.47	2.1599	23 34 27.0	8.335
3	20 40 47.96	2.1565	23 26 3.4	8.452
4	20 42 57.25	2.1532	23 17 32.8	8.568
5	20 45 6.34	2.1498	23 8 55.3	8.683
6	20 47 15.23	2.1464	23 0 10.8	8.798
7	20 49 23.91	2.1429	22 51 19.5	8.911
8	20 51 32.38	2.1395	22 42 21.5	9.023
9	20 53 40.65	2.1361	22 33 16.7	9.135
10	20 55 48.71	2.1325	22 24 5.3	9.246
11	20 57 56.55	2.1290	22 14 47.2	9.357
12	21 0 4.19	2.1256	22 5 22.5	9.466
13	21 2 11.62	2.1221	21 55 51.3	9.574
14	21 4 18.84	2.1186	21 46 13.6	9.682
15	21 6 25.85	2.1151	21 36 29.4	9.790
16	21 8 32.65	2.1116	21 26 38.8	9.896
17	21 10 39.24	2.1081	21 16 41.9	10.001
18	21 12 45.62	2.1046	21 6 38.7	10.106
19	21 14 51.79	2.1011	20 56 29.2	10.209
20	21 16 57.75	2.0977	20 46 13.6	10.311
21	21 19 3.51	2.0942	20 35 51.9	10.413
22	21 21 9.06	2.0907	20 25 24.1	10.514
23	21 23 14.40	2.0873	S. 20 14 50.2	10.615

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 25 19.54	2.0839	S. 20 4 10.3	10.714
1	21 27 24.47	2.0805	19 53 24.5	10.812
2	21 29 29.20	2.0771	19 42 32.9	10.909
3	21 31 33.72	2.0737	19 31 35.4	11.007
4	21 33 38.04	2.0704	19 20 32.1	11.103
5	21 35 42.16	2.0671	19 9 23.1	11.197
6	21 37 46.09	2.0638	18 58 8.5	11.290
7	21 39 49.82	2.0605	18 46 48.3	11.383
8	21 41 53.35	2.0572	18 35 22.5	11.476
9	21 43 56.68	2.0539	18 23 51.2	11.567
10	21 45 59.82	2.0507	18 12 14.5	11.657
11	21 48 2.77	2.0476	18 0 32.3	11.747
12	21 50 5.53	2.0445	17 48 44.8	11.835
13	21 52 8.11	2.0414	17 36 52.1	11.923
14	21 54 10.50	2.0383	17 24 54.1	12.010
15	21 56 12.70	2.0352	17 12 50.9	12.096
16	21 58 14.72	2.0322	17 0 42.6	12.181
17	22 0 16.57	2.0293	16 48 29.2	12.265
18	22 2 18.24	2.0264	16 36 10.8	12.348
19	22 4 19.74	2.0235	16 23 47.5	12.430
20	22 6 21.06	2.0206	16 11 19.2	12.512
21	22 8 22.21	2.0178	15 58 46.1	12.592
22	22 10 23.20	2.0151	15 46 8.2	12.672
23	22 12 24.02	2.0124	15 33 25.5	12.750
24	22 14 24.68	2.0097	S. 15 20 38.2	12.827

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 14 24.68	2.0097	S. 15 20 38.2	12.827
1	22 16 25.18	2.0071	15 7 46.3	12.903
2	22 18 25.53	2.0045	14 54 49.8	12.980
3	22 20 25.72	2.0019	14 41 48.7	13.056
4	22 22 25.76	1.9995	14 28 43.1	13.129
5	22 24 25.66	1.9972	14 15 33.2	13.202
6	22 26 25.42	1.9948	14 2 18.9	13.274
7	22 28 25.04	1.9925	13 49 0.3	13.346
8	22 30 24.52	1.9902	13 35 37.4	13.416
9	22 32 23.86	1.9880	13 22 10.4	13.484
10	22 34 23.08	1.9859	13 8 39.3	13.553
11	22 36 22.17	1.9838	12 55 4.0	13.622
12	22 38 21.13	1.9817	12 41 24.7	13.688
13	22 40 19.97	1.9798	12 27 41.5	13.753
14	22 42 18.70	1.9779	12 13 54.3	13.818
15	22 44 17.32	1.9761	12 0 3.3	13.882
16	22 46 15.83	1.9743	11 46 8.5	13.944
17	22 48 14.23	1.9725	11 32 10.0	14.006
18	22 50 12.53	1.9708	11 18 7.8	14.067
19	22 52 10.73	1.9692	11 4 2.0	14.127
20	22 54 8.84	1.9677	10 49 52.6	14.187
21	22 56 6.86	1.9663	10 35 39.6	14.245
22	22 58 4.80	1.9649	10 21 23.2	14.302
23	23 0 2.65	1.9635	S. 10 7 3.4	14.358

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 2 0.42	1.9622	S. 9 52 40.2	14.414
1	23 3 58.12	1.9611	9 38 13.7	14.468
2	23 5 55.75	1.9600	9 23 44.0	14.521
3	23 7 53.32	1.9590	9 9 11.2	14.574
4	23 9 50.83	1.9580	8 54 35.2	14.626
5	23 11 48.28	1.9571	8 39 56.1	14.676
6	23 13 45.68	1.9563	8 25 14.1	14.725
7	23 15 43.03	1.9555	8 10 29.1	14.774
8	23 17 40.34	1.9548	7 55 41.2	14.822
9	23 19 37.61	1.9542	7 40 50.4	14.870
10	23 21 34.84	1.9537	7 25 56.8	14.916
11	23 23 32.05	1.9532	7 11 0.5	14.960
12	23 25 29.23	1.9528	6 56 1.6	15.004
13	23 27 26.39	1.9526	6 41 0.1	15.047
14	23 29 23.54	1.9524	6 25 56.0	15.089
15	23 31 20.67	1.9522	6 10 49.4	15.130
16	23 33 17.80	1.9522	5 55 40.4	15.170
17	23 35 14.93	1.9522	5 40 29.0	15.209
18	23 37 12.06	1.9523	5 25 15.3	15.247
19	23 39 9.20	1.9524	5 9 59.4	15.284
20	23 41 6.35	1.9527	4 54 41.2	15.321
21	23 43 3.52	1.9531	4 39 20.9	15.355
22	23 45 0.72	1.9535	4 23 58.6	15.389
23	23 46 57.94	1.9539	4 8 34.2	15.422
24	23 48 55.19	1.9545	S. 3 53 7.9	15.454

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 5.					FRIDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 48 55.19	1.9545	S. 3 53 7.9	15.454	0	1 25 7.45	2.0899	N. 8 44 42.1	15.658
1	23 50 52.48	1.9552	3 37 39.7	15.486	1	1 27 13.00	2.0950	9 0 20.8	15.631
2	23 52 49.82	1.9560	3 22 9.6	15.516	2	1 29 18.85	2.1002	9 15 57.8	15.602
3	23 54 47.20	1.9568	3 6 37.8	15.544	3	1 31 25.02	2.1056	9 31 33.0	15.570
4	23 56 44.64	1.9578	2 51 4.3	15.572	4	1 33 31.52	2.1110	9 47 6.3	15.538
5	23 58 42.14	1.9588	2 35 29.1	15.599	5	1 35 38.34	2.1165	10 2 37.6	15.505
6	0 0 39.70	1.9599	2 19 52.4	15.625	6	1 37 45.50	2.1221	10 18 6.9	15.470
7	0 2 37.33	1.9611	2 4 14.1	15.650	7	1 39 53.00	2.1278	10 33 34.0	15.433
8	0 4 35.04	1.9624	1 48 34.4	15.673	8	1 42 0.84	2.1336	10 48 58.9	15.395
9	0 6 32.82	1.9637	1 32 53.3	15.696	9	1 44 9.03	2.1395	11 4 21.4	15.354
10	0 8 30.69	1.9652	1 17 10.9	15.717	10	1 46 17.58	2.1455	11 19 41.4	15.313
11	0 10 28.65	1.9668	1 1 27.2	15.738	11	1 48 26.49	2.1515	11 34 58.9	15.270
12	0 12 26.71	1.9685	0 45 42.3	15.758	12	1 50 35.76	2.1577	11 50 13.8	15.226
13	0 14 24.87	1.9702	0 29 56.2	15.777	13	1 52 45.41	2.1640	12 5 25.9	15.178
14	0 16 23.14	1.9720	S. 0 14 9.1	15.793	14	1 54 55.44	2.1703	12 20 35.2	15.130
15	0 18 21.51	1.9739	N. 0 1 39.0	15.809	15	1 57 5.85	2.1767	12 35 41.5	15.080
16	0 20 20.00	1.9759	0 17 28.0	15.824	16	1 59 16.65	2.1832	12 50 44.8	15.028
17	0 22 18.62	1.9780	0 33 17.9	15.838	17	2 1 27.84	2.1898	13 5 44.9	14.975
18	0 24 17.36	1.9801	0 49 8.6	15.851	18	2 3 39.43	2.1965	13 20 41.8	14.920
19	0 26 16.23	1.9824	1 5 0.0	15.863	19	2 5 51.42	2.2033	13 35 35.3	14.863
20	0 28 15.25	1.9849	1 20 52.1	15.873	20	2 8 3.83	2.2102	13 50 25.3	14.804
21	0 30 14.42	1.9874	1 36 44.8	15.882	21	2 10 16.65	2.2172	14 5 11.8	14.744
22	0 32 13.74	1.9899	1 52 38.0	15.891	22	2 12 29.89	2.2242	14 19 54.6	14.682
23	0 34 13.21	1.9925	N. 2 8 31.7	15.898	23	2 14 43.55	2.2312	N.14 34 33.6	14.618
	THURSDAY 6.					SATURDAY 8.			
0	0 36 12.84	1.9952	N. 2 24 25.7	15.903	0	2 16 57.64	2.2384	N.14 49 8.7	14.552
1	0 38 12.64	1.9981	2 40 20.0	15.908	1	2 19 12.16	2.2457	15 3 39.8	14.484
2	0 40 12.61	2.0010	2 56 14.6	15.912	2	2 21 27.12	2.2531	15 18 6.8	14.414
3	0 42 12.76	2.0040	3 12 9.4	15.913	3	2 23 42.53	2.2605	15 32 29.5	14.342
4	0 44 13.09	2.0072	3 28 4.2	15.914	4	2 25 58.38	2.2679	15 46 47.8	14.268
5	0 46 13.62	2.0105	3 43 59.1	15.914	5	2 28 14.68	2.2755	16 1 1.7	14.193
6	0 48 14.35	2.0138	3 59 53.9	15.913	6	2 30 31.44	2.2832	16 15 11.0	14.116
7	0 50 15.28	2.0172	4 15 48.6	15.910	7	2 32 48.66	2.2908	16 29 15.6	14.037
8	0 52 16.41	2.0206	4 31 43.1	15.906	8	2 35 6.34	2.2985	16 43 15.4	13.955
9	0 54 17.75	2.0242	4 47 37.3	15.900	9	2 37 24.48	2.3063	16 57 10.2	13.872
10	0 56 19.31	2.0279	5 3 31.1	15.893	10	2 39 43.09	2.3142	17 11 0.0	13.787
11	0 58 21.10	2.0317	5 19 24.5	15.886	11	2 42 2.18	2.3222	17 24 44.6	13.699
12	1 0 23.12	2.0357	5 35 17.4	15.877	12	2 44 21.75	2.3302	17 38 23.9	13.610
13	1 2 25.38	2.0397	5 51 9.7	15.866	13	2 46 41.80	2.3382	17 51 57.8	13.519
14	1 4 27.88	2.0437	6 7 1.3	15.854	14	2 49 2.33	2.3463	18 5 26.2	13.426
15	1 6 30.62	2.0478	6 22 52.2	15.841	15	2 51 23.35	2.3544	18 18 48.9	13.330
16	1 8 33.61	2.0521	6 38 42.2	15.826	16	2 53 44.86	2.3627	18 32 5.8	13.232
17	1 10 36.87	2.0566	6 54 31.3	15.810	17	2 56 6.87	2.3709	18 45 16.8	13.133
18	1 12 40.40	2.0611	7 10 19.4	15.792	18	2 58 29.37	2.3792	18 58 21.8	13.032
19	1 14 44.20	2.0657	7 26 6.4	15.773	19	3 0 52.37	2.3875	19 11 20.6	12.928
20	1 16 48.28	2.0703	7 41 52.2	15.753	20	3 3 15.87	2.3958	19 24 13.1	12.822
21	1 18 52.63	2.0749	7 57 36.8	15.732	21	3 5 39.87	2.4042	19 36 59.3	12.715
22	1 20 57.27	2.0798	8 13 20.0	15.708	22	3 8 4.38	2.4127	19 49 38.9	12.604
23	1 23 2.21	2.0848	8 29 1.8	15.684	23	3 10 29.40	2.4212	20 2 11.8	12.492
24	1 25 7.45	2.0899	N. 8 44 42.1	15.658	24	3 12 54.92	2.4296	N.20 14 38.0	12.378

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 12 54.92	2.4296	N.20 14 38.0	12.378
1	3 15 20.95	2.4381	20 26 57.2	12.262
2	3 17 47.49	2.4467	20 39 9.4	12.143
3	3 20 14.55	2.4552	20 51 14.4	12.022
4	3 22 42.12	2.4637	21 3 12.1	11.900
5	3 25 10.19	2.4722	21 15 2.4	11.775
6	3 27 38.78	2.4807	21 26 45.1	11.647
7	3 30 7.88	2.4892	21 38 20.1	11.518
8	3 32 37.49	2.4978	21 49 47.3	11.387
9	3 35 7.62	2.5064	22 1 6.5	11.253
10	3 37 38.26	2.5149	22 12 17.6	11.117
11	3 40 9.41	2.5234	22 23 20.5	10.979
12	3 42 41.07	2.5319	22 34 15.1	10.839
13	3 45 13.24	2.5403	22 45 1.2	10.697
14	3 47 45.91	2.5488	22 55 38.7	10.552
15	3 50 19.09	2.5572	23 6 7.5	10.406
16	3 52 52.77	2.5655	23 16 27.4	10.257
17	3 55 26.95	2.5738	23 26 38.3	10.107
18	3 58 1.63	2.5821	23 36 40.2	9.954
19	4 0 36.80	2.5903	23 46 32.8	9.799
20	4 3 12.46	2.5984	23 56 16.1	9.642
21	4 5 48.61	2.6065	24 5 49.9	9.483
22	4 8 25.24	2.6145	24 15 14.1	9.322
23	4 11 2.35	2.6225	N.24 24 28.5	9.158

MONDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 13 39.94	2.6304	N.24 33 33.1	8.993
1	4 16 18.00	2.6382	24 42 27.7	8.826
2	4 18 56.52	2.6458	24 51 12.2	8.657
3	4 21 35.50	2.6534	24 59 46.5	8.486
4	4 24 14.93	2.6609	25 8 10.5	8.312
5	4 26 54.81	2.6683	25 16 24.0	8.137
6	4 29 35.13	2.6757	25 24 27.0	7.961
7	4 32 15.89	2.6828	25 32 19.3	7.782
8	4 34 57.07	2.6898	25 40 0.8	7.601
9	4 37 38.67	2.6967	25 47 31.4	7.418
10	4 40 20.68	2.7036	25 54 51.0	7.234
11	4 43 3.10	2.7103	26 1 59.5	7.048
12	4 45 45.92	2.7169	26 8 56.7	6.860
13	4 48 29.13	2.7232	26 15 42.6	6.671
14	4 51 12.71	2.7294	26 22 17.2	6.480
15	4 53 56.66	2.7355	26 28 40.2	6.287
16	4 56 40.97	2.7415	26 34 51.6	6.093
17	4 59 25.64	2.7473	26 40 51.3	5.897
18	5 2 10.65	2.7529	26 46 39.2	5.699
19	5 4 55.99	2.7583	26 52 15.2	5.500
20	5 7 41.65	2.7636	26 57 39.3	5.301
21	5 10 27.62	2.7687	27 2 51.3	5.099
22	5 13 13.89	2.7736	27 7 51.2	4.897
23	5 16 0.45	2.7782	27 12 38.9	4.693
24	5 18 47.28	2.7828	N.27 17 14.3	4.487

TUESDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 18 47.28	2.7828	N.27 17 14.3	4.487
1	5 21 34.38	2.7871	27 21 37.3	4.280
2	5 24 21.73	2.7912	27 25 47.9	4.073
3	5 27 9.32	2.7951	27 29 46.1	3.866
4	5 29 57.14	2.7988	27 33 31.8	3.656
5	5 32 45.18	2.8023	27 37 4.8	3.444
6	5 35 33.42	2.8056	27 40 25.1	3.233
7	5 38 21.85	2.8086	27 43 32.7	3.021
8	5 41 10.45	2.8114	27 46 27.6	2.808
9	5 43 59.22	2.8141	27 49 9.7	2.594
10	5 46 48.14	2.8164	27 51 38.9	2.380
11	5 49 37.19	2.8186	27 53 55.3	2.166
12	5 52 26.37	2.8206	27 55 58.8	1.950
13	5 55 15.66	2.8223	27 57 49.3	1.733
14	5 58 5.04	2.8237	27 59 26.8	1.517
15	6 0 54.50	2.8248	28 0 51.3	1.300
16	6 3 44.02	2.8258	28 2 2.8	1.083
17	6 6 33.60	2.8267	28 3 1.3	0.866
18	6 9 23.22	2.8272	28 3 46.7	0.648
19	6 12 12.86	2.8274	28 4 19.1	0.431
20	6 15 2.51	2.8275	28 4 38.4	+ 0.213
21	6 17 52.16	2.8273	28 4 44.6	− 0.005
22	6 20 41.79	2.8268	28 4 37.8	0.222
23	6 23 31.38	2.8262	N.28 4 17.9	0.440

WEDNESDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	6 26 20.93	2.8252	N.28 3 45.0	0.658
1	6 29 10.41	2.8240	28 2 59.0	0.875
2	6 31 59.81	2.8227	28 2 0.0	1.091
3	6 34 49.13	2.8211	28 0 48.1	1.307
4	6 37 38.34	2.8192	27 59 23.2	1.523
5	6 40 27.43	2.8171	27 57 45.4	1.739
6	6 43 16.39	2.8147	27 55 54.6	1.954
7	6 46 5.20	2.8122	27 53 50.9	2.168
8	6 48 53.85	2.8094	27 51 34.4	2.381
9	6 51 42.33	2.8064	27 49 5.2	2.594
10	6 54 30.62	2.8032	27 46 23.2	2.806
11	6 57 18.71	2.7997	27 43 28.5	3.017
12	7 0 6.58	2.7960	27 40 21.2	3.227
13	7 2 54.23	2.7921	27 37 1.3	3.436
14	7 5 41.63	2.7879	27 33 28.9	3.644
15	7 8 28.78	2.7837	27 29 44.0	3.852
16	7 11 15.67	2.7792	27 25 46.7	4.058
17	7 14 2.28	2.7744	27 21 37.1	4.263
18	7 16 48.60	2.7695	27 17 15.2	4.467
19	7 19 34.62	2.7643	27 12 41.1	4.668
20	7 22 20.32	2.7590	27 7 55.0	4.868
21	7 25 5.70	2.7535	27 2 56.9	5.068
22	7 27 50.74	2.7478	26 57 46.8	5.267
23	7 30 35.44	2.7420	26 52 24.9	5.463
24	7 33 19.78	2.7359	N.26 46 51.3	5.658

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 33 19.78	2.7359	N.26 46 51.3	5.658
1	7 36 3.75	2.7297	26 41 6.0	5.852
2	7 38 47.35	2.7234	26 35 9.1	6.043
3	7 41 30.56	2.7168	26 29 0.8	6.233
4	7 44 13.37	2.7102	26 22 41.1	6.422
5	7 46 55.78	2.7034	26 16 10.1	6.609
6	7 49 37.78	2.6964	26 9 26.0	6.794
7	7 52 19.35	2.6893	26 2 34.8	6.977
8	7 55 0.49	2.6821	25 55 30.7	7.158
9	7 57 41.20	2.6747	25 48 15.8	7.338
10	8 0 21.46	2.6672	25 40 50.1	7.516
11	8 3 1.26	2.6596	25 33 13.8	7.692
12	8 5 40.61	2.6519	25 25 27.1	7.865
13	8 8 19.49	2.6440	25 17 30.0	8.037
14	8 10 57.89	2.6360	25 9 22.6	8.207
15	8 13 35.81	2.6280	25 1 5.1	8.376
16	8 16 13.25	2.6198	24 52 37.5	8.542
17	8 18 50.19	2.6115	24 44 0.1	8.705
18	8 21 26.63	2.6032	24 35 12.9	8.867
19	8 24 2.57	2.5948	24 26 16.1	9.026
20	8 26 38.01	2.5864	24 17 9.8	9.184
21	8 29 12.94	2.5778	24 7 54.0	9.340
22	8 31 47.35	2.5692	23 58 29.0	9.493
23	8 34 21.24	2.5605	N.23 48 54.9	9.644

FRIDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 36 54.61	2.5518	N.23 39 11.7	9.793
1	8 39 27.45	2.5430	23 29 19.7	9.939
2	8 41 59.77	2.5342	23 19 19.0	10.084
3	8 44 31.56	2.5253	23 9 9.6	10.227
4	8 47 2.81	2.5164	22 58 51.7	10.367
5	8 49 33.53	2.5076	22 48 25.5	10.505
6	8 52 3.72	2.4987	22 37 51.1	10.641
7	8 54 33.37	2.4896	22 27 8.6	10.775
8	8 57 2.47	2.4805	22 16 18.1	10.907
9	8 59 31.03	2.4715	22 5 19.8	11.036
10	9 1 59.05	2.4624	21 54 13.8	11.163
11	9 4 26.52	2.4533	21 43 0.3	11.288
12	9 6 53.45	2.4443	21 31 39.3	11.410
13	9 9 19.84	2.4353	21 20 11.1	11.530
14	9 11 45.69	2.4262	21 8 35.7	11.649
15	9 14 10.99	2.4172	20 56 53.2	11.765
16	9 16 35.75	2.4082	20 45 3.9	11.879
17	9 18 59.98	2.3992	20 33 7.8	11.991
18	9 21 23.66	2.3902	20 21 5.0	12.101
19	9 23 46.80	2.3812	20 8 55.7	12.208
20	9 26 9.41	2.3723	19 56 40.1	12.313
21	9 28 31.48	2.3634	19 44 18.2	12.416
22	9 30 53.02	2.3545	19 31 50.2	12.517
23	9 33 14.02	2.3456	19 19 16.2	12.616
24	9 35 34.49	2.3368	N.19 6 36.3	12.713

SATURDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 35 34.49	2.3368	N.19 6 36.3	12.713
1	9 37 54.44	2.3281	18 53 50.7	12.807
2	9 40 13.86	2.3193	18 40 59.5	12.899
3	9 42 32.75	2.3105	18 28 2.8	12.990
4	9 44 51.12	2.3019	18 15 0.7	13.078
5	9 47 8.98	2.2933	18 1 53.4	13.165
6	9 49 26.32	2.2847	17 48 40.9	13.250
7	9 51 43.15	2.2762	17 35 23.4	13.332
8	9 53 59.47	2.2678	17 22 1.1	13.412
9	9 56 15.29	2.2595	17 8 34.0	13.490
10	9 58 30.61	2.2512	16 55 2.3	13.566
11	10 0 45.43	2.2429	16 41 26.1	13.641
12	10 2 59.76	2.2347	16 27 45.4	13.713
13	10 5 13.60	2.2266	16 14 0.5	13.783
14	10 7 26.95	2.2185	16 0 11.4	13.852
15	10 9 39.82	2.2105	15 46 18.2	13.919
16	10 11 52.21	2.2026	15 32 21.1	13.984
17	10 14 4.13	2.1948	15 18 20.2	14.047
18	10 16 15.58	2.1870	15 4 15.5	14.108
19	10 18 26.57	2.1793	14 50 7.2	14.167
20	10 20 37.10	2.1717	14 35 55.4	14.225
21	10 22 47.17	2.1641	14 21 40.2	14.281
22	10 24 56.79	2.1567	14 7 21.7	14.335
23	10 27 5.97	2.1493	N.13 53 0.0	14.387

SUNDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 29 14.70	2.1419	N.13 38 35.3	14.437
1	10 31 23.00	2.1347	13 24 7.6	14.487
2	10 33 30.87	2.1276	13 9 36.9	14.534
3	10 35 38.31	2.1205	12 55 3.5	14.579
4	10 37 45.33	2.1136	12 40 27.4	14.622
5	10 39 51.94	2.1067	12 25 48.8	14.664
6	10 41 58.13	2.0999	12 11 7.7	14.705
7	10 44 3.92	2.0932	11 56 24.2	14.744
8	10 46 9.31	2.0865	11 41 38.4	14.782
9	10 48 14.30	2.0799	11 26 50.4	14.818
10	10 50 18.90	2.0735	11 12 0.3	14.852
11	10 52 23.12	2.0672	10 57 8.2	14.884
12	10 54 26.96	2.0609	10 42 14.2	14.916
13	10 56 30.43	2.0547	10 27 18.3	14.946
14	10 58 33.53	2.0486	10 12 20.7	14.973
15	11 0 36.26	2.0426	9 57 21.5	15.000
16	11 2 38.64	2.0367	9 42 20.7	15.026
17	11 4 40.67	2.0309	9 27 18.4	15.050
18	11 6 42.35	2.0252	9 12 14.7	15.072
19	11 8 43.69	2.0196	8 57 9.7	15.094
20	11 10 44.70	2.0140	8 42 3.4	15.114
21	11 12 45.37	2.0085	8 26 56.0	15.132
22	11 14 45.72	2.0032	8 11 47.5	15.149
23	11 16 45.76	1.9980	7 56 38.1	15.164
24	11 18 45.48	1.9928	N. 7 41 27.8	15.179

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 18 45.48	1.9928	N. 7 41 27.8	15.179
1	11 20 44.89	1.9877	7 26 16.6	15.192
2	11 22 44.00	1.9828	7 11 4.7	15.204
3	11 24 42.82	1.9779	6 55 52.1	15.215
4	11 26 41.35	1.9731	6 40 38.9	15.225
5	11 28 39.59	1.9683	6 25 25.1	15.233
6	11 30 37.55	1.9637	6 10 10.9	15.240
7	11 32 35.24	1.9592	5 54 56.3	15.246
8	11 34 32.66	1.9547	5 39 41.4	15.251
9	11 36 29.81	1.9503	5 24 26.2	15.255
10	11 38 26.70	1.9462	5 9 10.8	15.257
11	11 40 23.35	1.9422	4 53 55.3	15.257
12	11 42 19.76	1.9382	4 38 39.9	15.257
13	11 44 15.93	1.9342	4 23 24.5	15.257
14	11 46 11.86	1.9302	4 8 9.1	15.255
15	11 48 7.55	1.9263	3 52 53.9	15.252
16	11 50 3.02	1.9227	3 37 38.9	15.248
17	11 51 58.28	1.9192	3 22 24.2	15.243
18	11 53 53.32	1.9156	3 7 9.8	15.237
19	11 55 48.15	1.9122	2 51 55.8	15.229
20	11 57 42.78	1.9089	2 36 42.3	15.220
21	11 59 37.22	1.9057	2 21 29.4	15.210
22	12 1 31.47	1.9026	2 6 17.1	15.200
23	12 3 25.53	1.8995	N. 1 51 5.4	15.189

TUESDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 5 19.41	1.8965	N. 1 35 54.4	15.177
1	12 7 13.11	1.8937	1 20 44.2	15.163
2	12 9 6.65	1.8909	1 5 34.8	15.149
3	12 11 0.02	1.8882	0 50 26.3	15.134
4	12 12 53.23	1.8856	0 35 18.7	15.118
5	12 14 46.29	1.8832	0 20 12.1	15.102
6	12 16 39.21	1.8808	N. 0 5 6.5	15.084
7	12 18 31.98	1.8784	S. 0 9 58.0	15.065
8	12 20 24.62	1.8761	0 25 1.3	15.045
9	12 22 17.12	1.8739	0 40 3.4	15.024
10	12 24 9.49	1.8718	0 55 4.2	15.003
11	12 26 1.74	1.8699	1 10 3.7	14.981
12	12 27 53.88	1.8681	1 25 1.9	14.958
13	12 29 45.91	1.8662	1 39 58.7	14.934
14	12 31 37.83	1.8644	1 54 54.0	14.908
15	12 33 29.64	1.8627	2 9 47.7	14.883
16	12 35 21.36	1.8612	2 24 39.9	14.857
17	12 37 12.99	1.8597	2 39 30.5	14.829
18	12 39 4.53	1.8583	2 54 19.4	14.801
19	12 40 55.99	1.8571	3 9 6.6	14.772
20	12 42 47.38	1.8559	3 23 52.1	14.743
21	12 44 38.70	1.8548	3 38 35.8	14.712
22	12 46 29.95	1.8537	3 53 17.6	14.681
23	12 48 21.14	1.8527	4 7 57.5	14.649
24	12 50 12.27	1.8518	S. 4 22 35.5	14.617

WEDNESDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
	h m s	s	° ′ ″	″
0	12 50 12.27	1.8518	S. 4 22 35.5	14.617
1	12 52 3.35	1.8510	4 37 11.5	14.583
2	12 53 54.39	1.8503	4 51 45.4	14.548
3	12 55 45.38	1.8496	5 6 17.2	14.513
4	12 57 36.34	1.8491	5 20 46.9	14.478
5	12 59 27.27	1.8486	5 35 14.5	14.442
6	13 1 18.17	1.8482	5 49 39.9	14.404
7	13 3 9.05	1.8478	6 4 3.0	14.366
8	13 4 59.91	1.8476	6 18 23.8	14.327
9	13 6 50.76	1.8474	6 32 42.2	14.287
10	13 8 41.60	1.8473	6 46 58.2	14.247
11	13 10 32.44	1.8472	7 1 11.8	14.206
12	13 12 23.27	1.8473	7 15 22.9	14.164
13	13 14 14.11	1.8475	7 29 31.5	14.122
14	13 16 4.97	1.8477	7 43 37.5	14.078
15	13 17 55.84	1.8480	7 57 40.9	14.034
16	13 19 46.73	1.8483	8 11 41.6	13.990
17	13 21 37.64	1.8487	8 25 39.7	13.946
18	13 23 28.58	1.8492	8 39 35.1	13.900
19	13 25 19.55	1.8498	8 53 27.7	13.853
20	13 27 10.56	1.8505	9 7 17.4	13.805
21	13 29 1.61	1.8513	9 21 4.3	13.757
22	13 30 52.71	1.8521	9 34 48.3	13.708
23	13 32 43.86	1.8529	S. 9 48 29.3	13.659

THURSDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute
0	13 34 35.06	1.8538	S. 10 2 7.4	13.609
1	13 36 26.32	1.8549	10 15 42.4	13.558
2	13 38 17.65	1.8560	10 29 14.3	13.507
3	13 40 9.04	1.8571	10 42 43.2	13.455
4	13 42 0.50	1.8583	10 56 8.9	13.402
5	13 43 52.04	1.8597	11 9 31.4	13.348
6	13 45 43.66	1.8610	11 22 50.7	13.294
7	13 47 35.36	1.8624	11 36 6.7	13.239
8	13 49 27.15	1.8640	11 49 19.4	13.183
9	13 51 19.04	1.8656	12 2 28.7	13.127
10	13 53 11.02	1.8672	12 15 34.6	13.070
11	13 55 3.10	1.8688	12 28 37.1	13.013
12	13 56 55.28	1.8706	12 41 36.2	12.955
13	13 58 47.57	1.8724	12 54 31.7	12.895
14	14 0 39.97	1.8743	13 7 23.6	12.835
15	14 2 32.49	1.8763	13 20 11.9	12.775
16	14 4 25.13	1.8783	13 32 56.6	12.714
17	14 6 17.89	1.8803	13 45 37.6	12.652
18	14 8 10.77	1.8825	13 58 14.9	12.590
19	14 10 3.79	1.8847	14 10 48.4	12.527
20	14 11 56.94	1.8870	14 23 18.1	12.463
21	14 13 50.23	1.8893	14 35 44.0	12.399
22	14 15 43.66	1.8917	14 48 6.0	12.333
23	14 17 37.23	1.8941	15 0 24.0	12.267
24	14 19 30.95	1.8966	S. 15 12 38.0	12.200

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 19 30.95	1.8966	S. 15 12 38.0	12.200
1	14 21 24.82	1.8992	15 24 48.0	12.133
2	14 23 18.85	1.9018	15 36 54.0	12.066
3	14 25 13.04	1.9045	15 48 55.9	11.997
4	14 27 7.39	1.9072	16 0 53.6	11.927
5	14 29 1.90	1.9099	16 12 47.1	11.857
6	14 30 56.58	1.9127	16 24 36.4	11.787
7	14 32 51.43	1.9156	16 36 21.5	11.715
8	14 34 46.45	1.9186	16 48 2.2	11.642
9	14 36 41.65	1.9215	16 59 38.5	11.568
10	14 38 37.03	1.9246	17 11 10.4	11.495
11	14 40 32.60	1.9277	17 22 37.9	11.421
12	14 42 28.35	1.9308	17 34 0.9	11.346
13	14 44 24.29	1.9339	17 45 19.4	11.270
14	14 46 20.42	1.9372	17 56 33.3	11.193
15	14 48 16.75	1.9404	18 7 42.6	11.116
16	14 50 13.27	1.9437	18 18 47.2	11.038
17	14 52 9.99	1.9471	18 29 47.1	10.959
18	14 54 6.92	1.9505	18 40 42.3	10.880
19	14 56 4.05	1.9539	18 51 32.7	10.799
20	14 58 1.39	1.9573	19 2 18.2	10.718
21	14 59 58.93	1.9608	19 12 58.8	10.636
22	15 1 56.69	1.9644	19 23 34.5	10.554
23	15 3 54.66	1.9680	S. 19 34 5.2	10.471

SATURDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 5 52.85	1.9717	S. 19 44 31.0	10.387
1	15 7 51.26	1.9753	19 54 51.7	10.302
2	15 9 49.89	1.9790	20 5 7.2	10.216
3	15 11 48.74	1.9827	20 15 17.6	10.130
4	15 13 47.81	1.9864	20 25 22.8	10.043
5	15 15 47.11	1.9902	20 35 22.7	9.955
6	15 17 46.64	1.9941	20 45 17.4	9.867
7	15 19 46.40	1.9979	20 55 6.8	9.777
8	15 21 46.39	2.0018	21 4 50.7	9.687
9	15 23 46.61	2.0057	21 14 29.2	9.597
10	15 25 47.07	2.0097	21 24 2.3	9.505
11	15 27 47.77	2.0136	21 33 29.8	9.412
12	15 29 48.70	2.0175	21 42 51.7	9.318
13	15 31 49.87	2.0216	21 52 8.0	9.225
14	15 33 51.29	2.0256	22 1 18.7	9.131
15	15 35 52.94	2.0295	22 10 23.7	9.036
16	15 37 54.83	2.0336	22 19 23.0	8.939
17	15 39 56.97	2.0377	22 28 16.4	8.842
18	15 41 59.35	2.0417	22 37 4.0	8.744
19	15 44 1.97	2.0458	22 45 45.7	8.646
20	15 46 4.84	2.0499	22 54 21.5	8.547
21	15 48 7.96	2.0541	23 2 51.3	8.447
22	15 50 11.33	2.0582	23 11 15.1	8.346
23	15 52 14.94	2.0623	23 19 32.8	8.244
24	15 54 18.80	2.0664	S. 23 27 44.4	8.142

SUNDAY 23

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 54 18.80	2.0664	S. 23 27 44.4	8.142
1	15 56 22.91	2.0706	23 35 49.9	8.039
2	15 58 27.27	2.0747	23 43 49.1	7.934
3	16 0 31.87	2.0788	23 51 42.0	7.829
4	16 2 36.72	2.0829	23 59 28.6	7.724
5	16 4 41.82	2.0871	24 7 8.9	7.618
6	16 6 47.17	2.0912	24 14 42.8	7.511
7	16 8 52.76	2.0953	24 22 10.3	7.403
8	16 10 58.60	2.0994	24 29 31.2	7.294
9	16 13 4.69	2.1035	24 36 45.6	7.185
10	16 15 11.02	2.1076	24 43 53.4	7.075
11	16 17 17.60	2.1117	24 50 54.6	6.965
12	16 19 24.43	2.1158	24 57 49.2	6.854
13	16 21 31.50	2.1198	25 4 37.1	6.742
14	16 23 38.81	2.1238	25 11 18.2	6.628
15	16 25 46.36	2.1278	25 17 52.4	6.513
16	16 27 54.15	2.1318	25 24 19.8	6.399
17	16 30 2.18	2.1358	25 30 40.3	6.284
18	16 32 10.45	2.1398	25 36 53.9	6.168
19	16 34 18.96	2.1437	25 43 0.5	6.052
20	16 36 27.70	2.1476	25 49 0.1	5.934
21	16 38 36.67	2.1514	25 54 52.6	5.816
22	16 40 45.87	2.1553	26 0 38.0	5.697
23	16 42 55.30	2.1591	S. 26 6 16.2	5.578

MONDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 45 4.96	2.1628	S. 26 11 47.3	5.458
1	16 47 14.84	2.1666	26 17 11.2	5.336
2	16 49 24.95	2.1703	26 22 27.7	5.214
3	16 51 35.28	2.1740	26 27 36.9	5.092
4	16 53 45.83	2.1776	26 32 38.8	4.969
5	16 55 56.59	2.1812	26 37 33.2	4.845
6	16 58 7.57	2.1847	26 42 20.2	4.721
7	17 0 18.76	2.1882	26 46 59.7	4.596
8	17 2 30.15	2.1916	26 51 31.7	4.471
9	17 4 41.75	2.1950	26 55 56.2	4.345
10	17 6 53.55	2.1983	27 0 13.1	4.218
11	17 9 5.55	2.2017	27 4 22.3	4.090
12	17 11 17.75	2.2049	27 8 23.9	3.962
13	17 13 30.14	2.2081	27 12 17.8	3.833
14	17 15 42.72	2.2112	27 16 3.9	3.703
15	17 17 55.49	2.2143	27 19 42.2	3.574
16	17 20 8.44	2.2173	27 23 12.8	3.444
17	17 22 21.56	2.2202	27 26 35.5	3.313
18	17 24 34.86	2.2231	27 29 50.3	3.181
19	17 26 48.33	2.2259	27 32 57.2	3.049
20	17 29 1.97	2.2286	27 35 56.2	2.916
21	17 31 15.77	2.2313	27 38 47.2	2.783
22	17 33 29.73	2.2340	27 41 30.2	2.650
23	17 35 43.85	2.2366	27 44 5.2	2.516
24	17 37 58.12	2.2391	S. 27 46 32.1	2.381

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 25.					THURSDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 37 58.12	2.2391	S.27 46 32.1	2.381	0	19 26 45.75	2.2613	S.27 0 28.5	4.331
1	17 40 12.54	2.2415	27 48 50.9	2.246	1	19 29 1.38	2.2597	26 56 4.5	4.469
2	17 42 27.10	2.2438	27 51 1.6	2.111	2	19 31 16.91	2.2580	26 51 32.2	4.607
3	17 44 41.79	2.2460	27 53 4.2	1.975	3	19 33 32.34	2.2562	26 46 51.7	4.744
4	17 46 56.62	2.2482	27 54 58.6	1.838	4	19 35 47.66	2.2544	26 42 2.9	4.881
5	17 49 11.58	2.2503	27 56 44.8	1.702	5	19 38 2.87	2.2526	26 37 5.9	5.018
6	17 51 26.66	2.2523	27 58 22.9	1.566	6	19 40 17.97	2.2507	26 32 0.7	5.154
7	17 53 41.86	2.2543	27 59 52.7	1.428	7	19 42 32.95	2.2486	26 26 47.4	5.290
8	17 55 57.18	2.2562	28 1 14.2	1.289	8	19 44 47.80	2.2465	26 21 25.9	5.426
9	17 58 12.61	2.2580	28 2 27.4	1.151	9	19 47 2.53	2.2444	26 15 56.3	5.561
10	18 0 28.14	2.2597	28 3 32.4	1.013	10	19 49 17.13	2.2422	26 10 18.6	5.695
11	18 2 43.77	2.2613	28 4 29.0	0.874	11	19 51 31.59	2.2399	26 4 32.9	5.829
12	18 4 59.50	2.2629	28 5 17.3	0.735	12	19 53 45.91	2.2375	25 58 39.1	5.963
13	18 7 15.32	2.2644	28 5 57.2	0.596	13	19 56 0.09	2.2351	25 52 37.3	6.096
14	18 9 31.23	2.2657	28 6 28.8	0.457	14	19 58 14.12	2.2326	25 46 27.6	6.228
15	18 11 47.21	2.2670	28 6 52.0	0.317	15	20 0 28.00	2.2301	25 40 10.0	6.359
16	18 14 3.27	2.2682	28 7 6.8	0.176	16	20 2 41.73	2.2275	25 33 44.5	6.491
17	18 16 19.40	2.2693	28 7 13.1	− 0.035	17	20 4 55.30	2.2249	25 27 11.1	6.622
18	18 18 35.59	2.2703	28 7 11.0	+ 0.105	18	20 7 8.72	2.2222	25 20 29.9	6.752
19	18 20 51.84	2.2713	28 7 0.5	0.246	19	20 9 21.97	2.2194	25 13 40.9	6.881
20	18 23 8.15	2.2723	28 6 41.5	0.387	20	20 11 35.05	2.2167	25 6 44.2	7.010
21	18 25 24.52	2.2732	28 6 14.1	0.528	21	20 13 47.97	2.2138	24 59 39.7	7.139
22	18 27 40.93	2.2738	28 5 38.2	0.669	22	20 16 0.71	2.2109	24 52 27.5	7.266
23	18 29 57.37	2.2743	S.28 4 53.8	0.811	23	20 18 13.28	2.2080	S.24 45 7.8	7.392
	WEDNESDAY 26.					FRIDAY 28.			
0	18 32 13.84	2.2748	S.28 4 0.9	0.952	0	20 20 25.67	2.2050	S.24 37 40.5	7.518
1	18 34 30.34	2.2753	28 2 59.5	1.094	1	20 22 37.88	2.2020	24 30 5.6	7.644
2	18 36 46.87	2.2757	28 1 49.6	1.235	2	20 24 49.91	2.1990	24 22 23.2	7.769
3	18 39 3.42	2.2759	28 0 31.3	1.376	3	20 27 1.76	2.1959	24 14 33.3	7.893
4	18 41 19.98	2.2760	27 59 4.5	1.518	4	20 29 13.42	2.1928	24 6 36.0	8.017
5	18 43 36.54	2.2761	27 57 29.1	1.660	5	20 31 24.89	2.1896	23 58 31.3	8.139
6	18 45 53.11	2.2761	27 55 45.3	1.801	6	20 33 36.17	2.1864	23 50 19.3	8.261
7	18 48 9.67	2.2760	27 53 53.0	1.943	7	20 35 47.26	2.1832	23 42 0.0	8.382
8	18 50 26.23	2.2758	27 51 52.2	2.085	8	20 37 58.15	2.1799	23 33 33.4	8.503
9	18 52 42.77	2.2755	27 49 42.8	2.227	9	20 40 8.85	2.1766	23 24 59.6	8.622
10	18 54 59.29	2.2752	27 47 24.9	2.368	10	20 42 19.35	2.1733	23 16 18.7	8.741
11	18 57 15.79	2.2748	27 44 58.6	2.509	11	20 44 29.65	2.1700	23 7 30.7	8.859
12	18 59 32.26	2.2743	27 42 23.8	2.651	12	20 46 39.75	2.1667	22 58 35.6	8.977
13	19 1 48.70	2.2736	27 39 40.5	2.792	13	20 48 49.65	2.1633	22 49 33.5	9.093
14	19 4 5.09	2.2728	27 36 48.8	2.932	14	20 50 59.34	2.1598	22 40 24.5	9.208
15	19 6 21.44	2.2721	27 33 48.6	3.073	15	20 53 8.83	2.1565	22 31 8.5	9.323
16	19 8 37.74	2.2712	27 30 40.0	3.214	16	20 55 18.12	2.1531	22 21 45.7	9.437
17	19 10 53.98	2.2702	27 27 22.9	3.355	17	20 57 27.20	2.1496	22 12 16.1	9.550
18	19 13 10.17	2.2692	27 23 57.4	3.495	18	20 59 36.07	2.1462	22 2 39.7	9.662
19	19 15 26.29	2.2681	27 20 23.5	3.636	19	21 1 44.74	2.1428	21 52 56.6	9.773
20	19 17 42.34	2.2669	27 16 41.2	3.774	20	21 3 53.20	2.1393	21 43 6.9	9.884
21	19 19 58.32	2.2657	27 12 50.6	3.913	21	21 6 1.45	2.1358	21 33 10.5	9.994
22	19 22 14.22	2.2643	27 8 51.6	4.053	22	21 8 9.49	2.1323	21 23 7.6	10.102
23	19 24 30.03	2.2628	27 4 44.2	4.192	23	21 10 17.32	2.1288	21 12 58.2	10.210
24	19 26 45.75	2.2613	S.27 0 28.5	4.331	24	21 12 24.95	2.1254	S.21 2 42.4	10.317

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 12 24.95	2.1254	S.21 2 42.4	10.317
1	21 14 32.37	2.1218	20 52 20.2	10.423
2	21 16 39.57	2.1183	20 41 51.6	10.528
3	21 18 46.57	2.1149	20 31 16.8	10.632
4	21 20 53.36	2.1114	20 20 35.8	10.735
5	21 22 59.94	2.1079	20 9 48.6	10.837
6	21 25 6.31	2.1044	19 58 55.3	10.938
7	21 27 12.47	2.1010	19 47 56.0	11.039
8	21 29 18.43	2.0976	19 36 50.6	11.139
9	21 31 24.18	2.0942	19 25 39.3	11.237
10	21 33 29.73	2.0907	19 14 22.1	11.335
11	21 35 35.07	2.0873	19 2 59.1	11.432
12	21 37 40.21	2.0840	18 51 30.3	11.528
13	21 39 45.15	2.0806	18 39 55.8	11.622
14	21 41 49.88	2.0772	18 28 15.7	11.715
15	21 43 54.41	2.0739	18 16 30.0	11.808
16	21 45 58.75	2.0706	18 4 38.7	11.900
17	21 48 2.89	2.0673	17 52 42.0	11.990
18	21 50 6.83	2.0641	17 40 39.9	12.080
19	21 52 10.58	2.0609	17 28 32.4	12.169
20	21 54 14.14	2.0577	17 16 19.6	12.257
21	21 56 17.50	2.0544	17 4 1.6	12.343
22	21 58 20.67	2.0513	16 51 38.5	12.428
23	22 0 23.66	2.0482	S.16 39 10.2	12.514

SUNDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 2 26.46	2.0451	S.16 26 36.8	12.598
1	22 4 29.07	2.0421	16 13 58.4	12.681
2	22 6 31.51	2.0392	16 1 15.1	12.762
3	22 8 33.77	2.0362	15 48 27.0	12.842
4	22 10 35.85	2.0333	15 35 34.1	12.922
5	22 12 37.76	2.0304	15 22 36.4	13.001
6	22 14 39.50	2.0276	15 9 34.0	13.078
7	22 16 41.07	2.0248	14 56 27.0	13.155
8	22 18 42.47	2.0220	14 43 15.4	13.231
9	22 20 43.71	2.0193	14 29 59.3	13.305
10	22 22 44.78	2.0166	14 16 38.8	13.379
11	22 24 45.70	2.0140	14 3 13.9	13.452
12	22 26 46.46	2.0113	13 49 44.6	13.523
13	22 28 47.06	2.0087	13 36 11.1	13.593
14	22 30 47.51	2.0063	13 22 33.4	13.662
15	22 32 47.82	2.0040	13 8 51.6	13.731
16	22 34 47.99	2.0017	12 55 5.7	13.798
17	22 36 48.02	1.9993	12 41 15.8	13.864
18	22 38 47.91	1.9970	12 27 22.0	13.929
19	22 40 47.66	1.9948	12 13 24.3	13.993
20	22 42 47.28	1.9927	11 59 22.8	14.057
21	22 44 46.78	1.9906	11 45 17.5	14.119
22	22 46 46.15	1.9885	11 31 8.5	14.180
23	22 48 45.40	1.9865	11 16 55.9	14.239
24	22 50 44.53	1.9845	S.11 2 39.8	14.298

MONDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 50 44.53	1.9845	S.11 2 39.8	14.298
1	22 52 43.54	1.9827	10 48 20.1	14.356
2	22 54 42.45	1.9809	10 33 57.0	14.413
3	22 56 41.25	1.9791	10 19 30.5	14.469
4	22 58 39.94	1.9774	10 5 0.7	14.523
5	23 0 38.54	1.9758	9 50 27.7	14.577
6	23 2 37.04	1.9742	9 35 51.5	14.629
7	23 4 35.44	1.9727	9 21 12.2	14.681
8	23 6 33.76	1.9713	9 6 29.8	14.730
9	23 8 32.00	1.9700	8 51 44.4	14.781
10	23 10 30.16	1.9687	8 36 56.1	14.829
11	23 12 28.24	1.9674	8 22 4.9	14.877
12	23 14 26.25	1.9663	8 7 10.9	14.923
13	23 16 24.19	1.9652	7 52 14.2	14.968
14	23 18 22.07	1.9641	7 37 14.8	15.012
15	23 20 19.88	1.9631	7 22 12.8	15.054
16	23 22 17.64	1.9622	7 7 8.3	15.096
17	23 24 15.35	1.9615	6 52 1.2	15.138
18	23 26 13.02	1.9608	6 36 51.7	15.178
19	23 28 10.64	1.9601	6 21 39.9	15.216
20	23 30 8.23	1.9595	6 6 25.8	15.254
21	23 32 5.78	1.9589	5 51 9.4	15.291
22	23 34 3.30	1.9585	5 35 50.9	15.326
23	23 36 0.80	1.9581	S. 5 20 30.3	15.361

TUESDAY, AUGUST 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 37 58.27	1.9578	S. 5 5 7.7	15.394

PHASES OF THE MOON.

			d	h	m
☾	Last Quarter . .	July	6	10	5.5
●	New Moon		13	0	47.3
☽	First Quarter . . .		20	5	2.5
○	Full Moon		28	8	9.8

			d	h
☾	Perigee	July	11	11.5
☾	Apogee		23	14.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Spica	W.	102° 19′ 56″	2895	103° 52′ 21″	2887	105° 24′ 56″	2880	106° 57′ 41″	2873
	Antares	W.	56 26 2	2892	57 58 31	2885	59 31 9	2877	61 3 57	2869
	α Pegasi	E.	52 19 17	3461	50 58 9	3479	49 37 21	3499	48 16 56	3522
	α Arietis	E.	92 4 40	2945	90 33 18	2938	89 1 47	2930	87 30 6	2923
	Jupiter	E.	107 19 46	2968	105 48 53	2961	104 17 51	2952	102 46 38	2945
2	Antares	W.	68 50 28	2829	70 24 18	2821	71 58 19	2812	73 32 31	2803
	α Arietis	E.	79 49 17	2883	78 16 37	2876	76 43 48	2869	75 10 49	2860
	Jupiter	E.	95 8 4	2904	93 35 50	2894	92 3 24	2886	90 30 47	2876
	Aldebaran	E.	110 16 27	2887	108 43 52	2877	107 11 4	2868	105 38 4	2859
3	Antares	W.	81 26 30	2756	83 1 55	2747	84 37 33	2737	86 13 24	2727
	α Aquilæ	W.	43 56 42	5030	44 53 14	4891	45 51 36	4764	46 51 42	4646
	α Arietis	E.	67 23 14	2819	65 49 11	2811	64 14 58	2803	62 40 34	2795
	Jupiter	E.	82 44 43	2829	81 10 53	2820	79 36 51	2810	78 2 36	2799
	Aldebaran	E.	97 49 57	2809	96 15 41	2799	94 41 12	2789	93 6 30	2779
	Sun	E.	131 34 25	3123	130 6 43	3110	128 38 46	3099	127 10 35	3087
4	Antares	W.	94 16 4	2674	95 53 19	2662	97 30 50	2652	99 8 35	2640
	α Aquilæ	W.	52 15 9	4181	53 23 53	4107	54 33 48	4038	55 44 50	3972
	α Arietis	E.	54 45 55	2756	53 10 29	2747	51 34 52	2740	49 59 5	2733
	Jupiter	E.	70 7 54	2746	68 32 15	2735	66 56 21	2723	65 20 12	2712
	Aldebaran	E.	85 9 34	2726	83 33 29	2715	81 57 9	2704	80 20 35	2693
	Sun	E.	119 46 0	3026	118 16 20	3014	116 46 24	3001	115 16 12	2989
5	α Aquilæ	W.	61 55 6	3703	63 11 50	3657	64 29 23	3614	65 47 42	3575
	Fomalhaut	W.	29 33 43	3482	30 54 27	3387	32 16 58	3302	33 41 7	3226
	α Arietis	E.	41 58 1	2704	40 21 26	2701	38 44 47	2698	37 8 5	2698
	Jupiter	E.	57 15 36	2653	55 37 53	2640	53 59 53	2629	52 21 37	2616
	Aldebaran	E.	72 14 4	2638	70 36 1	2627	68 57 43	2616	67 19 10	2604
	Sun	E.	107 41 12	2923	106 9 22	2909	104 37 14	2895	103 4 49	2881
6	α Aquilæ	W.	72 29 33	3402	73 51 47	3374	75 14 33	3346	76 37 51	3320
	Fomalhaut	W.	41 1 38	2946	42 32 59	2904	44 5 13	2864	45 38 18	2827
	Jupiter	E.	44 6 2	2554	42 26 4	2541	40 45 48	2529	39 5 15	2517
	Aldebaran	E.	59 2 36	2551	57 22 33	2540	55 42 15	2530	54 1 43	2520
	Sun	E.	95 18 14	2811	93 44 0	2797	92 9 28	2782	90 34 37	2768
7	α Aquilæ	W.	83 41 24	3210	85 7 21	3193	86 33 39	3176	88 0 17	3162
	Fomalhaut	W.	53 34 48	2673	55 12 4	2647	56 49 55	2623	58 28 19	2599
	α Pegasi	W.	36 6 2	3461	37 27 10	3364	38 50 8	3276	40 14 47	3197
	Aldebaran	E.	45 35 50	2477	43 54 5	2471	42 12 11	2466	40 30 10	2462
	Sun	E.	82 35 37	2696	80 58 52	2682	79 21 48	2668	77 44 25	2653
8	α Aquilæ	W.	95 17 24	3106	96 45 26	3100	98 13 36	3095	99 41 52	3092
	Fomalhaut	W.	66 48 1	2495	68 29 21	2477	70 11 7	2460	71 53 17	2443
	α Pegasi	W.	47 39 5	2898	49 11 27	2852	50 44 48	2809	52 19 4	2769
	Sun	E.	69 32 44	2585	67 53 28	2572	66 13 55	2559	64 34 4	2547
9	Fomalhaut	W.	80 29 44	2370	82 14 2	2358	83 58 37	2346	85 43 29	2336
	α Pegasi	W.	60 22 14	2612	62 0 53	2587	63 40 6	2563	65 19 52	2541
	Sun	E.	56 10 37	2489	54 29 9	2479	52 47 26	2470	51 5 30	2460

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
1	Spica	W.	108 30 35	2865	110 3 39	2857	111 36 53	2849	113 10 17	2841
	Antares	W.	62 36 55	2862	64 10 3	2854	65 43 21	2846	67 16 49	2838
	α Pegasi	E.	46 56 56	3548	45 37 25	3578	44 18 27	3611	43 0 5	3649
	α Arietis	E.	85 58 16	2915	84 26 16	2907	82 54 6	2899	81 21 46	2892
	JUPITER	E.	101 15 16	2937	99 43 44	2928	98 12 1	2920	96 40 8	2912
2	Antares	W.	75 6 55	2795	76 41 30	2785	78 16 18	2775	79 51 18	2766
	α Arietis	E.	73 37 39	2852	72 4 19	2844	70 30 48	2835	68 57 6	2828
	JUPITER	E.	88 57 58	2868	87 24 58	2858	85 51 45	2848	84 18 20	2839
	Aldebaran	E.	104 4 52	2848	102 31 27	2839	100 57 50	2829	99 24 0	2819
3	Antares	W.	87 49 28	2716	89 25 46	2706	91 2 18	2696	92 39 4	2685
	α Aquilæ	W.	47 53 27	4539	48 56 45	4439	50 1 31	4347	51 7 40	4261
	α Arietis	E.	61 5 59	2787	59 31 14	2779	57 56 18	2771	56 21 12	2763
	JUPITER	E.	76 28 7	2789	74 53 25	2779	73 18 29	2768	71 43 19	2756
	Aldebaran	E.	91 31 34	2769	89 56 25	2758	88 21 2	2747	86 45 25	2737
	SUN	E.	125 42 10	3075	124 13 30	3063	122 44 35	3051	121 15 25	3039
4	Antares	W.	100 46 36	2629	102 24 52	2616	104 3 25	2604	105 42 14	2593
	α Aquilæ	W.	56 56 57	3919	58 10 5	3855	59 24 11	3801	60 39 12	3750
	α Arietis	E.	48 23 9	2726	46 47 4	2720	45 10 51	2714	43 34 30	2708
	JUPITER	E.	63 43 48	2701	62 7 9	2689	60 30 14	2677	58 53 3	2666
	Aldebaran	E.	78 43 46	2683	77 6 43	2672	75 29 25	2660	73 51 52	2649
	SUN	E.	113 45 45	2976	112 15 2	2962	110 44 2	2949	109 12 45	2936
5	α Aquilæ	W.	67 6 44	3536	68 26 28	3500	69 46 52	3466	71 7 54	3433
	Fomalhaut	W.	35 6 45	3158	36 33 44	3098	38 1 56	3043	39 31 16	2993
	α Arietis	E.	35 31 22	2698	33 54 40	2701	32 18 2	2705	30 41 29	2712
	JUPITER	E.	50 43 4	2604	49 4 14	2591	47 25 7	2579	45 45 43	2566
	Aldebaran	E.	65 40 21	2594	64 1 18	2583	62 21 59	2572	60 42 25	2561
	SUN	E.	101 32 6	2867	99 59 5	2853	98 25 46	2839	96 52 9	2825
6	α Aquilæ	W.	78 1 39	3995	79 25 56	3972	80 50 40	3950	82 15 50	3930
	Fomalhaut	W.	47 12 11	2792	48 46 49	2760	50 22 9	2730	51 58 9	2701
	JUPITER	E.	37 24 26	2505	35 43 20	2493	34 1 57	2482	32 20 18	2470
	Aldebaran	E.	52 20 58	2510	50 39 59	2502	48 58 48	2493	47 17 25	2485
	SUN	E.	88 59 27	2753	87 23 58	2739	85 48 10	2725	84 12 3	2710
7	α Aquilæ	W.	89 27 12	3148	90 54 24	3135	92 21 51	3124	93 49 32	3114
	Fomalhaut	W.	60 7 16	2576	61 46 44	2555	63 26 41	2534	65 7 7	2514
	α Pegasi	W.	41 41 0	3125	43 8 39	3061	44 37 36	3002	46 7 46	2947
	Aldebaran	E.	38 48 3	2459	37 5 52	2458	35 23 40	2458	33 41 28	2461
	SUN	E.	76 6 42	2639	74 28 40	2626	72 50 20	2612	71 11 41	2599
8	α Aquilæ	W.	101 10 11	3091	102 38 31	3093	104 6 49	3095	105 35 5	3098
	Fomalhaut	W.	73 35 51	2426	75 18 48	2412	77 2 6	2397	78 45 45	2383
	α Pegasi	W.	53 54 12	2733	55 30 8	2699	57 6 49	2668	58 44 12	2639
	SUN	E.	62 53 56	2535	61 13 31	2522	59 32 49	2511	57 51 51	2499
9	Fomalhaut	W.	87 28 36	2326	89 13 57	2317	90 59 32	2309	92 45 19	2301
	α Pegasi	W.	67 0 8	2521	68 40 52	2502	70 22 3	2485	72 3 38	2469
	SUN	E.	49 23 21	2452	47 41 0	2444	45 58 28	2436	44 15 45	2430

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
10	Fomalhaut	W.	94° 31′ 17″	2295	96° 17′ 24″	2289	98° 3′ 40″	2284	99° 50′ 3″	2281
	α Pegasi	W.	73 45 35	2454	75 27 53	2441	77 10 29	2429	78 53 22	2419
	α Arietis	W.	30 17 26	2302	32 3 23	2275	33 49 59	2251	35 37 11	2231
	Sun	E.	42 32 53	2424	40 49 53	2419	39 6 46	2415	37 23 33	2413
11	α Pegasi	W.	87 30 52	2386	89 14 47	2383	90 58 46	2382	92 42 47	2382
	α Arietis	W.	44 39 40	2161	46 29 7	2152	48 18 47	2144	50 8 39	2138
	Sun	E.	28 47 6	2419	27 3 58	2426	25 21 0	2437	23 38 18	2451
15	Sun	W.	27 10 15	2670	28 47 35	2681	30 24 41	2692	32 1 32	2704
	Spica	E.	62 40 16	2294	60 54 8	2310	59 8 23	2326	57 23 2	2344
	Antares	E.	108 33 40	2291	106 47 27	2307	105 1 38	2323	103 16 12	2339
16	Sun	W.	40 1 18	2779	41 36 14	2795	43 10 49	2812	44 45 1	2829
	Spica	E.	48 42 30	2431	46 59 39	2449	45 17 14	2467	43 35 14	2485
	Antares	E.	94 35 8	2426	92 52 10	2443	91 9 37	2461	89 27 29	2479
17	Sun	W.	52 30 21	2919	54 2 16	2938	55 33 47	2956	57 4 55	2973
	Venus	W.	31 57 9	3010	33 27 9	3028	34 56 47	3046	36 26 3	3065
	Spica	E.	35 11 40	2577	33 32 14	2596	31 53 14	2615	30 14 40	2634
	Antares	E.	81 3 5	2569	79 23 27	2586	77 44 13	2604	76 5 24	2622
18	Sun	W.	64 34 59	3064	66 3 53	3081	67 32 26	3098	69 0 38	3114
	Venus	W.	43 46 49	3154	45 13 53	3171	46 40 37	3188	48 7 0	3206
	Regulus	W.	32 16 10	2738	33 52 0	2751	35 27 32	2766	37 2 45	2779
	Antares	E.	67 57 12	2707	66 20 42	2724	64 44 34	2741	63 8 48	2756
19	Sun	W.	76 16 40	3195	77 42 55	3210	79 8 52	3225	80 34 32	3239
	Venus	W.	55 13 56	3287	56 38 23	3302	58 2 32	3317	59 26 24	3332
	Regulus	W.	44 54 16	2849	46 27 40	2862	48 0 48	2875	49 33 39	2887
	Antares	E.	55 15 5	2832	53 41 19	2846	52 7 51	2860	50 34 41	2873
	α Aquilæ	E.	104 19 26	3723	103 3 3	3726	101 46 43	3729	100 30 27	3733
20	Sun	W.	87 38 48	3305	89 2 54	3317	90 26 46	3328	91 50 25	3338
	Venus	W.	66 21 42	3398	67 44 1	3410	69 6 6	3421	70 27 59	3433
	Regulus	W.	57 14 1	2946	58 45 22	2956	60 16 30	2966	61 47 25	2976
	Antares	E.	42 52 57	2935	41 21 22	2946	39 50 1	2956	38 18 53	2966
	α Aquilæ	E.	94 10 34	3768	92 54 58	3776	91 39 31	3786	90 24 14	3795
21	Sun	W.	98 45 43	3386	100 8 15	3395	101 30 37	3402	102 52 51	3409
	Venus	W.	77 14 25	3480	78 35 11	3488	79 55 49	3496	81 16 18	3503
	Regulus	W.	69 19 8	3018	70 48 58	3026	72 18 39	3032	73 48 12	3039
	Saturn	W.	30 18 17	3035	31 47 46	3043	33 17 6	3049	34 46 18	3056
	α Aquilæ	E.	84 10 30	3852	82 56 21	3865	81 42 26	3878	80 28 44	3892
22	Sun	W.	109 42 8	3439	111 3 40	3443	112 25 8	3447	113 46 31	3450
	Venus	W.	87 56 56	3531	89 16 46	3535	90 36 32	3538	91 56 14	3542
	Regulus	W.	81 14 10	3064	82 43 4	3067	84 11 54	3071	85 40 39	3073
	Saturn	W.	42 10 30	3081	43 39 3	3085	45 7 31	3088	46 35 55	3091
	Spica	W.	27 10 55	3069	28 39 43	3071	30 8 28	3073	31 37 10	3075
	α Aquilæ	E.	74 23 59	3971	73 11 51	3990	72 0 2	4010	70 48 32	4029
	Fomalhaut	E.	101 7 18	3959	99 42 18	3961	98 17 21	3963	96 52 26	3965

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
10	Fomalhaut	W.	101° 36′ 31″	2278	103° 23′ 3″	2276	105° 9′ 38″	2276	106° 56′ 13″	2277
	α Pegasi	W.	80 36 29	2410	82 19 50	2402	84 3 22	2396	85 47 3	2390
	α Arietis	W.	37 24 53	2212	39 13 2	2196	41 1 35	2183	42 50 28	2170
	Sun	E.	35 40 17	2411	33 56 58	2411	32 13 39	2412	30 30 21	2414
11	α Pegasi	W.	94 26 48	2389	96 10 48	2385	97 54 44	2389	99 38 35	2394
	α Arietis	W.	51 58 40	2133	53 48 49	2130	55 39 3	2126	57 29 22	2125
	Sun	E.	21 55 56	2470	20 14 1	2495	18 32 41	2525	16 52 3	2560
15	Sun	W.	33 38 7	2717	35 14 24	2732	36 50 22	2747	38 26 0	2762
	Spica	E.	55 38 6	2361	53 53 35	2378	52 9 28	2395	50 25 46	2413
	Antares	E.	101 31 10	2356	99 46 32	2373	98 2 19	2391	96 18 31	2408
16	Sun	W.	46 18 51	2847	47 52 18	2865	49 25 22	2883	50 58 3	2901
	Spica	E.	41 53 40	2504	40 12 32	2522	38 31 49	2540	36 51 32	2559
	Antares	E.	87 45 46	2497	86 4 29	2515	84 23 36	2533	82 43 8	2551
17	Sun	W.	58 35 41	2992	60 6 4	3010	61 36 4	3027	63 5 43	3046
	Venus	W.	37 54 56	3082	39 23 27	3101	40 51 36	3119	42 19 23	3136
	Spica	E.	28 36 31	2653	26 58 48	2672	25 21 31	2692	23 44 40	2710
	Antares	E.	74 26 59	2639	72 48 57	2657	71 11 19	2674	69 34 4	2691
18	Sun	W.	70 28 30	3131	71 56 2	3148	73 23 14	3163	74 50 7	3180
	Venus	W.	49 33 2	3223	50 58 44	3239	52 24 7	3255	53 49 11	3271
	Regulus	W.	38 37 40	2794	40 12 16	2808	41 46 34	2821	43 20 34	2835
	Antares	E.	61 33 23	2772	59 58 18	2788	58 23 34	2803	56 49 10	2818
19	Sun	W.	81 59 55	3253	83 25 1	3266	84 49 52	3280	86 14 27	3292
	Venus	W.	60 49 59	3345	62 13 18	3359	63 36 21	3372	64 59 9	3386
	Regulus	W.	51 6 14	2900	52 38 33	2912	54 10 37	2924	55 42 26	2935
	Antares	E.	49 1 48	2886	47 29 11	2899	45 56 51	2911	44 24 46	2924
	α Aquilæ	E.	99 14 15	3739	97 58 9	3746	96 42 10	3752	95 26 18	3760
20	Sun	W.	93 13 52	3350	94 37 6	3359	96 0 9	3369	97 23 1	3378
	Venus	W.	71 49 38	3443	73 11 6	3453	74 32 23	3463	75 53 29	3471
	Regulus	W.	63 18 8	2985	64 48 39	2994	66 18 59	3002	67 49 9	3011
	Antares	E.	36 47 58	2976	35 17 15	2985	33 46 44	2994	32 16 24	3003
	α Aquilæ	E.	89 9 7	3805	87 54 10	3817	86 39 25	3827	85 24 51	3840
21	Sun	W.	104 14 57	3416	105 36 55	3423	106 58 46	3429	108 20 30	3434
	Venus	W.	82 36 39	3509	83 56 53	3515	85 17 0	3521	86 37 1	3526
	Regulus	W.	75 17 37	3044	76 46 55	3050	78 16 6	3055	79 45 11	3060
	Saturn	W.	36 15 22	3062	37 44 18	3067	39 13 8	3072	40 41 52	3077
	α Aquilæ	E.	79 15 16	3907	78 2 3	3922	76 49 6	3937	75 36 24	3954
22	Sun	W.	115 7 51	3454	116 29 7	3456	117 50 20	3458	119 11 31	3461
	Venus	W.	93 15 52	3545	94 35 27	3546	95 55 0	3548	97 14 31	3550
	Regulus	W.	87 9 21	3076	88 38 0	3078	90 6 36	3079	91 35 11	3081
	Saturn	W.	48 4 16	3093	49 32 34	3095	51 0 49	3097	52 29 2	3099
	Spica	W.	33 5 50	3077	34 34 28	3078	36 3 4	3079	37 31 39	3079
	α Aquilæ	E.	69 37 21	4050	68 26 31	4074	67 16 4	4097	66 5 59	4122
	Fomalhaut	E.	95 27 33	3966	94 2 42	3967	92 37 52	3968	91 13 3	3970

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	VENUS	W.	98° 34′ 0″	3551	99° 53′ 28″	3551	101° 12′ 56″	3551	102° 32′ 24″	3551
	Regulus	W.	93 3 44	3082	94 32 16	3082	96 0 48	3082	97 29 20	3082
	SATURN	W.	53 57 13	3100	55 25 23	3100	56 53 33	3100	58 21 43	3100
	Spica	W.	39 0 14	3080	40 28 48	3080	41 57 22	3080	43 25 56	3078
	α Aquilæ	E.	64 56 19	4150	63 47 5	4177	62 38 17	4207	61 29 58	4239
	Fomalhaut	E.	89 48 16	3970	88 23 30	3970	86 58 44	3971	85 33 59	3972
24	SATURN	W.	65 42 48	3092	67 11 7	3089	68 39 30	3087	70 7 56	3083
	Spica	W.	50 49 12	3069	52 17 59	3067	53 46 49	3064	55 15 43	3060
	α Aquilæ	E.	55 56 34	4438	54 51 47	4486	53 47 43	4540	52 44 26	4596
	Fomalhaut	E.	78 30 20	3973	77 5 37	3972	75 40 53	3972	74 16 9	3972
	α Pegasi	E.	99 33 12	3402	98 10 58	3396	96 48 37	3391	95 26 10	3386
25	SATURN	W.	77 31 13	3063	79 0 8	3057	80 29 10	3052	81 58 18	3047
	Spica	W.	62 41 22	3039	64 10 46	3034	65 40 17	3029	67 9 54	3023
	α Aquilæ	E.	47 41 40	4967	46 44 19	5063	45 48 13	5168	44 53 27	5281
	Fomalhaut	E.	67 12 31	3974	65 47 49	3974	64 23 7	3975	62 58 26	3976
	α Pegasi	E.	88 32 35	3363	87 9 36	3359	85 46 33	3355	84 23 25	3351
26	SATURN	W.	89 25 43	3017	90 55 35	3009	92 25 36	3002	93 55 46	2996
	Spica	W.	74 39 49	2992	76 10 12	2985	77 40 43	2978	79 11 23	2972
	Antares	W.	28 45 17	2992	30 15 40	2985	31 46 12	2977	33 16 53	2970
	Fomalhaut	E.	55 55 36	3290	54 31 13	3295	53 6 56	3300	51 42 45	3306
	α Pegasi	E.	77 26 45	3336	76 3 15	3333	74 39 42	3332	73 16 7	3330
27	Spica	W.	86 47 0	2933	88 18 37	2926	89 50 23	2917	91 22 20	2909
	Antares	W.	40 52 38	2932	42 24 16	2924	43 56 5	2916	45 28 4	2908
	Fomalhaut	E.	44 44 25	3365	43 21 28	3382	41 58 51	3402	40 36 37	3425
	α Pegasi	E.	66 17 57	3331	64 54 21	3333	63 30 48	3336	62 7 18	3339
	α Arietis	E.	107 26 47	2986	105 56 17	2978	104 25 37	2969	102 54 45	2961
28	Spica	W.	99 4 41	2868	100 37 41	2859	102 10 52	2854	103 44 14	2842
	Antares	W.	53 10 36	2866	54 43 39	2857	56 16 53	2848	57 50 18	2840
	α Pegasi	E.	55 11 21	3377	53 48 38	3390	52 26 10	3404	51 3 58	3420
	α Arietis	E.	95 17 42	2916	93 45 44	2907	92 13 34	2899	90 41 14	2890
29	Antares	W.	65 40 13	2796	67 14 46	2787	68 49 31	2779	70 24 27	2769
	α Arietis	E.	82 56 44	2847	81 23 17	2839	79 49 40	2831	78 15 52	2822
	JUPITER	E.	102 57 34	2856	101 24 19	2848	99 50 53	2838	98 17 15	2829
	Aldebaran	E.	113 25 19	2859	111 52 7	2849	110 18 43	2839	108 45 6	2829
30	Antares	W.	78 22 3	2725	79 58 9	2716	81 34 27	2707	83 10 57	2699
	α Aquilæ	W.	42 5 48	5098	42 58 57	5131	43 54 11	4979	44 51 23	4841
	α Arietis	E.	70 24 14	2783	68 49 24	2775	67 14 23	2767	65 39 12	2760
	JUPITER	E.	90 26 9	2784	88 51 20	2775	87 16 20	2766	85 41 8	2757
	Aldebaran	E.	100 53 49	2781	99 18 56	2772	97 43 51	2763	96 8 34	2753
31	Antares	W.	91 16 21	2655	92 54 1	2646	94 31 53	2638	96 9 57	2629
	α Aquilæ	W.	50 3 10	4301	51 10 2	4217	52 18 12	4139	53 27 36	4068
	α Arietis	E.	57 41 1	2727	56 4 57	2721	54 28 45	2716	52 52 26	2710
	JUPITER	E.	77 42 12	2713	76 5 50	2704	74 29 16	2695	72 52 30	2687
	Aldebaran	E.	88 9 11	2710	86 32 44	2701	84 56 5	2692	83 19 15	2684

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	VENUS	W.	103° 51′ 52″	3549	105° 11′ 22″	3548	106° 30′ 53″	3546	107° 50′ 26″	3545
	Regulus	W.	98 57 52	3081	100 26 25	3079	101 55 0	3078	103 23 36	3077
	SATURN	W.	59 49 53	3099	61 18 4	3097	62 46 17	3096	64 14 31	3094
	Spica	W.	44 54 32	3078	46 23 9	3076	47 51 48	3074	49 20 29	3073
	α Aquilæ	E.	60 22 9	4274	59 14 52	4310	58 8 9	4350	57 2 2	4393
	Fomalhaut	E.	84 9 15	3272	82 44 31	3272	81 19 47	3272	79 55 3	3273
24	SATURN	W.	71 36 26	3080	73 5 0	3076	74 33 39	3072	76 2 23	3067
	Spica	W.	56 44 41	3056	58 13 44	3053	59 42 51	3048	61 12 4	3044
	α Aquilæ	E.	51 41 58	4659	50 40 24	4727	49 39 47	4800	48 40 11	4880
	Fomalhaut	E.	72 51 25	3272	71 26 41	3273	70 1 58	3272	68 37 14	3273
	α Pegasi	E.	94 3 38	3381	92 41 0	3377	91 18 17	3372	89 55 29	3367
25	SATURN	W.	83 27 32	3042	84 56 53	3035	86 26 22	3029	87 55 59	3023
	Spica	W.	68 39 38	3018	70 9 29	3011	71 39 28	3005	73 9 34	2998
	α Aquilæ	E.	44 0 6	5408	43 8 17	5547	42 18 6	5701	41 29 40	5872
	Fomalhaut	E.	61 33 47	3278	60 9 10	3280	58 44 35	3283	57 20 4	3286
	α Pegasi	E.	83 0 13	3347	81 36 56	3345	80 13 36	3341	78 50 12	3338
26	SATURN	W.	95 26 4	2989	96 56 31	2981	98 27 8	2973	99 57 54	2966
	Spica	W.	80 42 11	2964	82 13 9	2957	83 44 16	2949	85 15 33	2941
	Antares	W.	34 47 43	2963	36 18 42	2955	37 49 51	2947	39 21 10	2940
	Fomalhaut	E.	50 18 43	3316	48 54 50	3325	47 31 8	3337	46 7 39	3350
	α Pegasi	E.	71 52 30	3329	70 28 52	3328	69 5 13	3328	67 41 34	3330
27	Spica	W.	92 54 27	2901	94 26 45	2893	95 59 13	2884	97 31 52	2876
	Antares	W.	47 0 13	2899	48 32 33	2891	50 5 3	2883	51 37 44	2874
	Fomalhaut	E.	39 14 49	3453	37 53 32	3485	36 32 51	3522	35 12 51	3565
	α Pegasi	E.	60 43 52	3345	59 20 32	3351	57 57 20	3358	56 34 16	3366
	α Arietis	E.	101 23 43	2952	99 52 30	2942	98 21 5	2934	96 49 29	2925
28	Spica	W.	105 17 48	2834	106 51 32	2825	108 25 28	2816	109 59 35	2807
	Antares	W.	59 23 54	2831	60 57 42	2822	62 31 41	2814	64 5 51	2805
	α Pegasi	E.	49 42 4	3438	48 20 31	3461	46 59 23	3485	45 38 42	3514
	α Arietis	E.	89 8 42	2881	87 35 59	2873	86 3 5	2864	84 30 0	2855
29	Antares	W.	71 59 35	2760	73 34 55	2752	75 10 26	2743	76 46 9	2735
	α Arietis	E.	76 41 53	2815	75 7 44	2806	73 33 24	2798	71 58 54	2791
	JUPITER	E.	96 43 25	2820	95 9 23	2811	93 35 10	2802	92 0 45	2794
	Aldebaran	E.	107 11 16	2819	105 37 13	2810	104 2 58	2800	102 28 30	2790
30	Antares	W.	84 47 38	2690	86 24 31	2681	88 1 36	2672	89 38 53	2664
	α Aquilæ	W.	45 50 26	4714	46 51 14	4597	47 53 41	4491	48 57 41	4391
	α Arietis	E.	64 3 52	2753	62 28 23	2746	60 52 44	2740	59 16 57	2733
	JUPITER	E.	84 5 44	2748	82 30 8	2740	80 54 21	2731	79 18 22	2722
	Aldebaran	E.	94 33 5	2744	92 57 24	2735	91 21 31	2727	89 45 27	2718
31	Antares	W.	97 48 12	2630	99 26 40	2618	101 5 19	2603	102 44 10	2594
	α Aquilæ	W.	54 38 9	4001	55 49 48	3936	57 2 29	3880	58 16 9	3836
	α Arietis	E.	51 16 0	2705	49 39 27	2701	48 2 49	2697	46 26 5	2694
	JUPITER	E.	71 15 33	2678	69 38 24	2670	68 1 4	2661	66 23 32	2653
	Aldebaran	E.	81 42 14	2676	80 5 2	2668	78 27 39	2660	76 50 5	2652

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to / Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	8 47 21.47	9.696	N.17 54 48.8	–38.10	15 48.09	66.61	6 4.19	0.161
Wed.	2	8 51 13.87	9.671	17 39 25.5	38.83	15 48.21	66.52	6 0.05	0.185
Thur.	3	8 55 5.67	9.647	17 23 45.0	39.54	15 48.34	66.43	5 55.31	0.210
Frid.	4	8 58 56.90	9.623	17 7 47.5	–40.25	15 48.47	66.35	5 49.99	0.234
Sat.	5	9 2 47.54	9.598	16 51 33.2	40.94	15 48.61	66.26	5 44.10	0.258
SUN.	6	9 6 37.60	9.574	16 35 2.5	41.62	15 48.74	66.18	5 37.61	0.282
Mon.	7	9 10 27.09	9.550	16 18 15.6	–42.28	15 48.89	66.09	5 30.56	0.305
Tues.	8	9 14 16.00	9.526	16 1 12.9	42.94	15 49.04	66.01	5 22.95	0.329
Wed.	9	9 18 4.34	9.502	15 43 54.6	43.58	15 49.19	65.92	5 14.75	0.353
Thur.	10	9 21 52.12	9.479	15 26 21.2	–44.21	15 49.35	65.84	5 6.00	0.376
Frid.	11	9 25 39.34	9.456	15 8 32.7	44.82	15 49.51	65.76	4 56.69	0.400
Sat.	12	9 29 25.99	9.432	14 50 29.8	45.42	15 49.68	65.68	4 46.81	0.423
SUN.	13	9 33 12.09	9.409	14 32 12.5	–46.01	15 49.85	65.60	4 36.39	0.446
Mon.	14	9 36 57.63	9.386	14 13 41.4	46.58	15 50.02	65.52	4 25.40	0.469
Tues.	15	9 40 42.63	9.364	13 54 56.7	47.14	15 50.21	65.44	4 13.88	0.491
Wed.	16	9 44 27.10	9.341	13 35 58.7	–47.68	15 50.39	65.37	4 1.82	0.514
Thur.	17	9 48 11.02	9.319	13 16 47.9	48.21	15 50.58	65.29	3 49.22	0.536
Frid.	18	9 51 54.43	9.297	12 57 24.5	48.73	15 50.78	65.22	3 36.11	0.557
Sat.	19	9 55 37.33	9.277	12 37 48.9	–49.23	15 50.98	65.15	3 22.49	0.578
SUN.	20	9 59 19.73	9.256	12 18 1.4	49.72	15 51.18	65.08	3 8.37	0.599
Mon.	21	10 3 1.64	9.236	11 58 2.2	50.20	15 51.38	65.01	2 53.76	0.618
Tues.	22	10 6 43.08	9.217	11 37 51.9	–50.66	15 51.59	64.95	2 38.69	0.638
Wed.	23	10 10 24.06	9.198	11 17 30.6	51.11	15 51.80	64.88	2 23.16	0.656
Thur.	24	10 14 4.60	9.180	10 56 58.6	51.55	15 52.01	64.82	2 7.19	0.675
Frid.	25	10 17 44.70	9.163	10 36 16.4	–51.97	15 52.22	64.76	1 50.78	0.692
Sat.	26	10 21 24.41	9.145	10 15 24.1	52.38	15 52.44	64.70	1 33.98	0.708
SUN.	27	10 25 3.72	9.131	9 54 22.1	52.78	15 52.65	64.65	1 16.80	0.724
Mon.	28	10 28 42.68	9.116	9 33 10.6	–53.17	15 52.87	64.59	0 59.24	0.739
Tues.	29	10 32 21.28	9.101	9 11 50.0	53.54	15 53.09	64.54	0 41.34	0.753
Wed.	30	10 35 59.55	9.088	8 50 20.5	53.91	15 53.31	64.49	0 23.10	0.766
Thur.	31	10 39 37.51	9.075	8 28 42.5	54.26	15 53.54	64.45	0 4.56	0.779
Frid.	32	10 43 15.18	9.064	N. 8 6 56.2	–54.59	15 53.76	64.40	0 14.29	0.791

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from / Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	8 47 20.49	9.696	N. 17 54 52.6	−38.10	6 4.21	0.160	8 41 16.28
Wed.	2	8 51 12.90	9.671	17 39 29.4	38.83	6 0.07	0.185	8 45 12.83
Thur.	3	8 55 4.72	9.647	17 23 48.9	39.54	5 55.33	0.210	8 49 9.39
Frid.	4	8 58 55.96	9.623	17 7 51.4	−40.25	5 50.01	0.234	8 53 5.95
Sat.	5	9 2 46.62	9.599	16 51 37.1	40.94	5 44.12	0.258	8 57 2.50
SUN.	6	9 6 36.70	9.575	16 35 6.4	41.62	5 37.64	0.282	9 0 59.06
Mon.	7	9 10 26.21	9.551	16 18 19.5	−42.29	5 30.59	0.305	9 4 55.62
Tues.	8	9 14 15.15	9.527	16 1 16.7	42.94	5 22.98	0.329	9 8 52.17
Wed.	9	9 18 3.51	9.503	15 43 58.4	43.58	5 14.78	0.353	9 12 48.73
Thur.	10	9 21 51.31	9.480	15 26 24.9	−44.21	5 6.03	0.376	9 16 45.28
Frid.	11	9 25 38.56	9.457	15 8 36.4	44.82	4 56.72	0.400	9 20 41.84
Sat.	12	9 29 25.24	9.434	14 50 33.3	45.42	4 46.84	0.423	9 24 38.40
SUN.	13	9 33 11.37	9.411	14 32 16.0	−46.01	4 36.42	0.446	9 28 34.95
Mon.	14	9 36 56.94	9.388	14 13 44.8	46.58	4 25.43	0.469	9 32 31.51
Tues.	15	9 40 41.97	9.365	13 55 0.0	47.14	4 13.91	0.491	9 36 28.06
Wed.	16	9 44 26.47	9.343	13 36 1.9	−47.69	4 1.85	0.514	9 40 24.62
Thur.	17	9 48 10.43	9.321	13 16 50.9	48.22	3 49.25	0.536	9 44 21.18
Frid.	18	9 51 53.87	9.299	12 57 27.4	48.74	3 36.14	0.557	9 48 17.73
Sat.	19	9 55 36.81	9.279	12 37 51.6	−49.24	3 22.52	0.578	9 52 14.29
SUN.	20	9 59 19.24	9.258	12 18 3.9	49.73	3 8.40	0.599	9 56 10.84
Mon.	21	10 3 1.19	9.238	11 58 4.6	50.19	2 53.79	0.618	10 0 7.40
Tues.	22	10 6 42.67	9.219	11 37 54.1	−50.67	2 38.72	0.638	10 4 3.95
Wed.	23	10 10 23.69	9.200	11 17 32.6	51.13	2 23.18	0.656	10 8 0.51
Thur.	24	10 14 4.27	9.182	10 57 0.4	51.56	2 7.21	0.675	10 11 57.06
Frid.	25	10 17 44.42	9.165	10 36 17.9	−51.98	1 50.80	0.692	10 15 53.62
Sat.	26	10 21 24.17	9.148	10 15 25.4	52.39	1 34.00	0.708	10 19 50.17
SUN.	27	10 25 3.53	9.132	9 54 23.2	52.79	1 16.81	0.724	10 23 46.72
Mon.	28	10 28 42.53	9.118	9 33 11.4	−53.18	0 59.25	0.739	10 27 43.28
Tues.	29	10 32 21.18	9.103	9 11 50.6	53.55	0 41.35	0.753	10 31 39.83
Wed.	30	10 35 59.49	9.090	8 50 20.8	53.92	0 23.10	0.766	10 35 36.39
Thur.	31	10 39 37.50	9.077	8 28 42.5	54.27	0 4.56	0.779	10 39 32.94
Frid.	32	10 43 15.21	9.066	N. 8 6 56.0	−54.61	0 14.29	0.791	10 43 29.50

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign − prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.									Mean Time of Sidereal Noon.
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	213	129 23 59.9	23 36.0	143.54	− 0.17	0.0063270	−23.5	15 16 13.21
2	214	130 21 25.4	21 1.4	143.59	− 0.04	0.0062700	24.1	15 12 17.30
3	215	131 18 52.1	18 27.9	143.64	+ 0.09	0.0062115	24.7	15 8 21.39
4	216	132 16 20.0	15 55.6	143.69	+ 0.22	0.0061514	−25.4	15 4 25.48
5	217	133 13 49.2	13 24.7	143.74	0.34	0.0060896	26.1	15 0 29.57
6	218	134 11 19.7	10 55.1	143.80	0.44	0.0060260	26.9	14 56 33.66
7	219	135 8 51.6	8 26.8	143.85	+ 0.52	0.0059604	−27.8	14 52 37.74
8	220	136 6 24.8	5 59.8	143.91	0.58	0.0058928	28.6	14 48 41.84
9	221	137 3 59.3	3 34.2	143.97	0.62	0.0058230	29.6	14 44 45.93
10	222	138 1 35.2	1 10.0	144.02	+ 0.63	0.0057509	−30.5	14 40 50.02
11	223	138 59 12.4	58 47.0	144.08	0.60	0.0056766	31.4	14 36 54.11
12	224	139 56 50.9	56 25.3	144.13	0.54	0.0056001	32.3	14 32 58.19
13	225	140 54 30.6	54 4.9	144.18	+ 0.46	0.0055214	−33.2	14 29 2.29
14	226	141 52 11.4	51 45.6	144.22	0.36	0.0054405	34.2	14 25 6.38
15	227	142 49 53.3	49 27.3	144.27	0.24	0.0053574	35.1	14 21 10.47
16	228	143 47 36.4	47 10.3	144.32	+ 0.10	0.0052723	−35.9	14 17 14.56
17	229	144 45 20.7	44 54.5	144.37	− 0.04	0.0051852	36.7	14 13 18.64
18	230	145 43 6.1	42 39.7	144.41	0.17	0.0050963	37.4	14 9 22.74
19	231	146 40 52.6	40 26.1	144.46	− 0.28	0.0050058	−38.0	14 5 26.82
20	232	147 38 40.2	38 13.5	144.51	0.38	0.0049138	38.6	14 1 30.92
21	233	148 36 29.0	36 2.2	144.56	0.46	0.0048205	39.1	13 57 35.01
22	234	149 34 18.9	33 52.0	144.60	− 0.52	0.0047260	−39.6	13 53 39.10
23	235	150 32 10.0	31 43.0	144.66	0.54	0.0046305	40.0	13 49 43.19
24	236	151 30 2.5	29 35.3	144.72	0.53	0.0045340	40.4	13 45 47.28
25	237	152 27 56.4	27 29.1	144.78	− 0.49	0.0044366	−40.7	13 41 51.37
26	238	153 25 51.7	25 24.3	144.84	0.42	0.0043385	41.0	13 37 55.47
27	239	154 23 48.5	23 20.9	144.90	0.33	0.0042397	41.3	13 33 59.56
28	240	155 21 47.0	21 19.3	144.97	− 0.22	0.0041401	−41.6	13 30 3.65
29	241	156 19 47.2	19 19.4	145.05	− 0.10	0.0040399	41.9	13 26 7.74
30	242	157 17 49.2	17 21.3	145.12	+ 0.03	0.0039391	42.1	13 22 11.83
31	243	158 15 53.0	15 24.9	145.20	0.16	0.0038376	42.5	13 18 15.92
32	244	159 13 58.7	13 30.5	145.28	+ 0.28	0.0037352	−42.9	13 14 20.01

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour.
—$9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 36.1	15 40.2	57 8.8	+1.28	57 24.1	+1.28	15 24.3	1.85	19.0
2	15 44.4	15 48.6	57 39.4	1.28	57 54.7	1.27	16 9.4	1.91	20.0
3	15 52.7	15 56.8	58 9.9	1.26	58 24.9	1.24	16 56.4	2.02	21.0
4	16 0.5	16 4.7	58 39.6	+1.20	58 53.8	+1.15	17 46.6	2.18	22.0
5	16 8.3	16 11.7	59 7.2	1.08	59 19.8	1.00	18 41.6	2.39	23.0
6	16 14.8	16 17.5	59 31.2	0.89	59 41.1	0.75	19 41.3	2.58	24.0
7	16 19.7	16 21.4	59 49.2	+0.59	59 55.2	+0.40	20 44.9	2.69	25.0
8	16 22.3	16 22.6	59 58.7	+0.18	59 59.6	−0.05	21 49.6	2.68	26.0
9	16 22.0	16 20.6	59 57.6	−0.30	59 52.5	0.55	22 52.5	2.54	27.0
10	16 18.5	16 15.4	59 44.5	−0.80	59 33.4	−1.04	23 51.1	2.33	28.0
11	16 11.7	16 7.1	59 19.5	1.27	59 2.9	1.47	ó		29.0
12	16 2.0	15 56.4	58 44.2	1.64	58 23.5	1.78	0 44.5	2.13	0.6
13	15 50.4	15 44.1	58 1.4	−1.88	57 38.4	−1.94	1 33.4	1.96	1.6
14	15 37.7	15 31.3	57 14.8	1.96	56 51.4	1.94	2 18.9	1.84	2.6
15	15 25.0	15 19.0	56 28.3	1.88	56 6.2	1.79	3 2.2	1.78	3.6
16	15 13.4	15 8.1	55 45.4	−1.67	55 26.1	−1.53	3 44.5	1.77	4.6
17	15 3.4	14 59.3	55 8.8	1.35	54 53.6	1.17	4 27.4	1.80	5.6
18	14 55.8	14 52.8	54 40.7	0.98	54 30.1	0.77	5 11.5	1.87	6.6
19	14 50.7	14 49.2	54 22.2	−0.55	54 16.8	−0.34	5 57.6	1.97	7.6
20	14 48.5	14 48.4	54 14.0	−0.13	54 13.8	+0.08	6 46.0	2.06	8.6
21	14 49.0	14 50.3	54 16.0	+0.28	54 20.6	0.48	7 36.6	2.15	9.6
22	14 52.2	14 54.6	54 27.5	+0.66	54 36.5	+0.83	8 28.8	2.18	10.6
23	14 57.5	15 1.0	54 47.3	0.97	54 59.8	1.11	9 21.2	2.17	11.6
24	15 4.8	15 8.9	55 13.9	1.22	55 29.1	1.31	10 12.6	2.11	12.6
25	15 13.3	15 17.9	55 45.3	+1.37	56 2.0	+1.41	11 2.5	2.03	13.6
26	15 22.6	15 27.3	56 19.2	1.44	56 36.5	1.43	11 50.2	1.95	14.6
27	15 31.9	15 36.5	56 53.6	1.41	57 10.3	1.37	12 36.3	1.90	15.6
28	15 40.9	15 45.0	57 26.4	+1.31	57 41.7	+1.23	13 21.8	1.88	16.6
29	15 48.9	15 52.5	57 56.0	1.15	58 9.3	1.06	14 7.2	1.91	17.6
30	15 55.9	15 58.9	58 21.5	0.97	58 32.5	0.87	14 54.1	2.00	18.6
31	16 1.5	16 3.9	58 42.3	0.77	58 50.9	0.67	15 43.7	2.14	19.6
32	16 5.9	16 7.6	58 58.3	+0.57	59 4.6	+0.48	16 37.1	2.31	20.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 37 58.27	1.9578	S. 5 5 7.7	15.394
1	23 39 55.73	1.9576	4 49 43.1	15.426
2	23 41 53.18	1.9574	4 34 16.6	15.457
3	23 43 50.62	1.9573	4 18 48.3	15.486
4	23 45 48.06	1.9574	4 3 18.3	15.515
5	23 47 45.51	1.9575	3 47 46.5	15.543
6	23 49 42.96	1.9576	3 32 13.1	15.570
7	23 51 40.42	1.9578	3 16 38.1	15.596
8	23 53 37.90	1.9581	3 1 1.6	15.620
9	23 55 35.40	1.9585	2 45 23.7	15.643
10	23 57 32.92	1.9590	2 29 44.5	15.665
11	23 59 30.48	1.9596	2 14 3.9	15.687
12	0 1 28.08	1.9603	1 58 22.1	15.707
13	0 3 25.72	1.9610	1 42 39.1	15.726
14	0 5 23.40	1.9617	1 26 55.0	15.742
15	0 7 21.13	1.9626	1 11 10.0	15.758
16	0 9 18.91	1.9636	0 55 24.0	15.774
17	0 11 16.76	1.9647	0 39 37.1	15.789
18	0 13 14.68	1.9659	0 23 49.3	15.802
19	0 15 12.67	1.9671	S. 0 8 0.8	15.814
20	0 17 10.73	1.9683	N. 0 7 48.4	15.825
21	0 19 8.87	1.9697	0 23 38.2	15.834
22	0 21 7.09	1.9712	0 39 28.5	15.842
23	0 23 5.41	1.9728	N. 0 55 19.3	15.850

WEDNESDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 25 3.83	1.9745	N. 1 11 10.5	15.856
1	0 27 2.35	1.9762	1 27 2.0	15.861
2	0 29 0.97	1.9779	1 42 53.8	15.865
3	0 30 59.70	1.9798	1 58 45.8	15.868
4	0 32 58.55	1.9819	2 14 37.9	15.869
5	0 34 57.53	1.9840	2 30 30.1	15.869
6	0 36 56.63	1.9861	2 46 22.2	15.868
7	0 38 55.86	1.9883	3 2 14.2	15.866
8	0 40 55.23	1.9907	3 18 6.1	15.863
9	0 42 54.75	1.9932	3 33 57.7	15.858
10	0 44 54.41	1.9957	3 49 49.0	15.852
11	0 46 54.23	1.9983	4 5 39.9	15.844
12	0 48 54.21	2.0010	4 21 30.3	15.836
13	0 50 54.35	2.0038	4 37 20.2	15.827
14	0 52 54.66	2.0067	4 53 9.5	15.815
15	0 54 55.15	2.0097	5 8 58.0	15.803
16	0 56 55.82	2.0127	5 24 45.8	15.790
17	0 58 56.67	2.0158	5 40 32.8	15.775
18	1 0 57.71	2.0190	5 56 18.8	15.758
19	1 2 58.95	2.0223	6 12 3.8	15.741
20	1 5 0.39	2.0257	6 27 47.7	15.723
21	1 7 2.04	2.0293	6 43 30.5	15.703
22	1 9 3.91	2.0329	6 59 12.1	15.681
23	1 11 5.99	2.0365	7 14 52.3	15.658
24	1 13 8.29	2.0403	N. 7 30 31.1	15.635

THURSDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 13 8.29	2.0403	N. 7 30 31.1	15.635
1	1 15 10.82	2.0442	7 46 8.5	15.610
2	1 17 13.59	2.0481	8 1 44.3	15.583
3	1 19 16.59	2.0521	8 17 18.4	15.554
4	1 21 19.84	2.0563	8 32 50.8	15.525
5	1 23 23.34	2.0605	8 48 21.4	15.494
6	1 25 27.10	2.0648	9 3 50.1	15.462
7	1 27 31.12	2.0692	9 19 16.8	15.428
8	1 29 35.40	2.0736	9 34 41.5	15.393
9	1 31 39.95	2.0782	9 50 4.0	15.357
10	1 33 44.78	2.0828	10 5 24.3	15.319
11	1 35 49.89	2.0876	10 20 42.3	15.280
12	1 37 55.29	2.0924	10 35 57.9	15.239
13	1 40 0.98	2.0973	10 51 11.0	15.197
14	1 42 6.97	2.1023	11 6 21.5	15.153
15	1 44 13.26	2.1074	11 21 29.4	15.108
16	1 46 19.86	2.1125	11 36 34.5	15.061
17	1 48 26.77	2.1178	11 51 36.7	15.013
18	1 50 33.99	2.1231	12 6 36.0	14.963
19	1 52 41.54	2.1286	12 21 32.3	14.912
20	1 54 49.42	2.1341	12 36 25.5	14.859
21	1 56 57.63	2.1397	12 51 15.4	14.804
22	1 59 6.18	2.1453	13 6 2.0	14.749
23	2 1 15.07	2.1511	N. 13 20 45.3	14.692

FRIDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 3 24.31	2.1569	N. 13 35 25.0	14.632
1	2 5 33.90	2.1628	13 50 1.1	14.572
2	2 7 43.85	2.1687	14 4 33.6	14.510
3	2 9 54.15	2.1748	14 19 2.3	14.446
4	2 12 4.82	2.1810	14 33 27.1	14.381
5	2 14 15.87	2.1872	14 47 48.0	14.314
6	2 16 27.29	2.1935	15 2 4.8	14.245
7	2 18 39.09	2.1998	15 16 17.4	14.174
8	2 20 51.27	2.2062	15 30 25.7	14.102
9	2 23 3.84	2.2127	15 44 29.7	14.029
10	2 25 16.80	2.2193	15 58 29.2	13.953
11	2 27 30.16	2.2260	16 12 24.1	13.877
12	2 29 43.92	2.2327	16 26 14.4	13.798
13	2 31 58.08	2.2394	16 39 59.9	13.717
14	2 34 12.65	2.2463	16 53 40.5	13.635
15	2 36 27.63	2.2532	17 7 16.1	13.551
16	2 38 43.03	2.2602	17 20 46.6	13.465
17	2 40 58.85	2.2671	17 34 11.9	13.378
18	2 43 15.08	2.2741	17 47 32.0	13.289
19	2 45 31.74	2.2812	18 0 46.6	13.198
20	2 47 48.83	2.2884	18 13 55.7	13.105
21	2 50 6.35	2.2957	18 26 59.2	13.011
22	2 52 24.31	2.3030	18 39 57.0	12.915
23	2 54 42.71	2.3103	18 52 49.0	12.817
24	2 57 1.54	2.3176	N. 19 5 35.0	12.717

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 5.					**MONDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 57 1.54	2.3176	N.19 5 35.0	12.717	0	4 56 53.71	2.6631	N.26 46 7.0	5.788
1	2 59 20.82	2.3251	19 18 15.0	12.615	1	4 59 33.66	2.6686	26 51 48.7	5.603
2	3 1 40.55	2.3325	19 30 48.8	12.512	2	5 2 13.94	2.6739	26 57 19.3	5.417
3	3 4 0.72	2.3399	19 43 16.4	12.407	3	5 4 54.53	2.6791	27 2 38.7	5.229
4	3 6 21.34	2.3474	19 55 37.6	12.299	4	5 7 35.43	2.6843	27 7 46.8	5.040
5	3 8 42.41	2.3550	20 7 52.3	12.190	5	5 10 16.64	2.6892	27 12 43.5	4.849
6	3 11 3.94	2.3626	20 20 0.4	12.079	6	5 12 58.13	2.6939	27 17 28.7	4.657
7	3 13 25.92	2.3702	20 32 1.8	11.967	7	5 15 39.90	2.6985	27 22 2.4	4.465
8	3 15 48.36	2.3778	20 43 56.4	11.853	8	5 18 21.95	2.7030	27 26 24.5	4.271
9	3 18 11.26	2.3855	20 55 44.1	11.737	9	5 21 4.26	2.7072	27 30 34.9	4.076
10	3 20 34.62	2.3932	21 7 24.8	11.618	10	5 23 46.82	2.7113	27 34 33.6	3.880
11	3 22 58.44	2.4008	21 18 58.3	11.497	11	5 26 29.62	2.7152	27 38 20.5	3.682
12	3 25 22.72	2.4085	21 30 24.5	11.375	12	5 29 12.65	2.7190	27 41 55.5	3.484
13	3 27 47.46	2.4162	21 41 43.3	11.252	13	5 31 55.90	2.7227	27 45 18.6	3.286
14	3 30 12.67	2.4240	21 52 54.7	11.127	14	5 34 39.37	2.7262	27 48 29.8	3.087
15	3 32 38.34	2.4317	22 3 58.5	10.999	15	5 37 23.04	2.7293	27 51 29.0	2.887
16	3 35 4.47	2.4394	22 14 54.6	10.870	16	5 40 6.89	2.7323	27 54 16.2	2.685
17	3 37 31.06	2.4471	22 25 42.9	10.738	17	5 42 50.92	2.7352	27 56 51.2	2.483
18	3 39 58.12	2.4548	22 36 23.2	10.605	18	5 45 35.12	2.7379	27 59 14.1	2.280
19	3 42 25.64	2.4625	22 46 55.5	10.470	19	5 48 19.47	2.7403	28 1 24.8	2.077
20	3 44 53.62	2.4701	22 57 19.6	10.333	20	5 51 3.96	2.7426	28 3 23.3	1.873
21	3 47 22.05	2.4778	23 7 35.4	10.194	21	5 53 48.58	2.7447	28 5 9.6	1.669
22	3 49 50.95	2.4854	23 17 42.9	10.054	22	5 56 33.32	2.7466	28 6 43.6	1.463
23	3 52 20.30	2.4930	N.23 27 41.9	9.912	23	5 59 18.17	2.7483	N.28 8 5.2	1.257
	SUNDAY 6.					**TUESDAY 8.**			
0	3 54 50.11	2.5006	N.23 37 32.3	9.768	0	6 2 3.12	2.7498	N.28 9 11.5	1.052
1	3 57 20.37	2.5081	23 47 14.0	9.622	1	6 4 48.15	2.7511	28 10 11.4	0.846
2	3 59 51.08	2.5157	23 56 46.9	9.473	2	6 7 33.25	2.7521	28 10 56.0	0.640
3	4 2 22.25	2.5233	24 6 10.8	9.323	3	6 10 18.40	2.7529	28 11 28.2	0.433
4	4 4 53.87	2.5307	24 15 25.7	9.172	4	6 13 3.60	2.7536	28 11 48.0	0.226
5	4 7 25.93	2.5379	24 24 31.5	9.019	5	6 15 48.83	2.7541	28 11 55.4	+ 0.019
6	4 9 58.42	2.5452	24 33 28.0	8.864	6	6 18 34.09	2.7543	28 11 50.3	− 0.188
7	4 12 31.35	2.5525	24 42 15.2	8.707	7	6 21 19.35	2.7543	28 11 32.8	0.395
8	4 15 4.72	2.5597	24 50 52.9	8.548	8	6 24 4.61	2.7542	28 11 2.9	0.602
9	4 17 38.52	2.5668	24 59 21.0	8.388	9	6 26 49.86	2.7539	28 10 20.6	0.809
10	4 20 12.74	2.5739	25 7 39.4	8.226	10	6 29 35.08	2.7533	28 9 25.8	1.016
11	4 22 47.39	2.5809	25 15 48.1	8.062	11	6 32 20.25	2.7524	28 8 18.6	1.222
12	4 25 22.45	2.5878	25 23 46.9	7.897	12	6 35 5.37	2.7514	28 6 59.1	1.428
13	4 27 57.93	2.5947	25 31 35.6	7.729	13	6 37 50.42	2.7502	28 5 27.2	1.635
14	4 30 33.81	2.6013	25 39 14.4	7.561	14	6 40 35.39	2.7488	28 3 42.9	1.842
15	4 33 10.09	2.6079	25 46 43.0	7.391	15	6 43 20.28	2.7472	28 1 46.2	2.047
16	4 35 46.76	2.6145	25 54 1.3	7.219	16	6 46 5.06	2.7454	27 59 37.2	2.252
17	4 38 23.83	2.6211	26 1 9.3	7.046	17	6 48 49.73	2.7434	27 57 16.0	2.456
18	4 41 1.29	2.6275	26 8 6.8	6.870	18	6 51 34.27	2.7412	27 54 42.5	2.660
19	4 43 39.13	2.6337	26 14 53.7	6.693	19	6 54 18.67	2.7388	27 51 56.8	2.864
20	4 46 17.33	2.6397	26 21 30.0	6.516	20	6 57 2.92	2.7362	27 48 58.9	3.067
21	4 48 55.89	2.6457	26 27 55.6	6.337	21	6 59 47.01	2.7333	27 45 48.8	3.269
22	4 51 34.81	2.6517	26 34 10.4	6.155	22	7 2 30.92	2.7303	27 42 26.6	3.470
23	4 54 14.09	2.6575	26 40 14.2	5.972	23	7 5 14.65	2.7272	27 38 52.4	3.670
24	4 56 53.71	2.6631	N.26 46 7.0	5.788	24	7 7 58.18	2.7238	N.27 35 6.2	3.870

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 7 58.18	2.7238	N.27 35 6.2	3.870
1	7 10 41.50	2.7202	27 31 8.0	4.069
2	7 13 24.60	2.7164	27 26 57.9	4.267
3	7 16 7.47	2.7125	27 22 36.0	4.463
4	7 18 50.10	2.7084	27 18 2.3	4.659
5	7 21 32.48	2.7041	27 13 16.9	4.853
6	7 24 14.59	2.6996	27 8 19.9	5.047
7	7 26 56.43	2.6950	27 3 11.3	5.240
8	7 29 37.99	2.6902	26 57 51.1	5.432
9	7 32 19.26	2.6852	26 52 19.5	5.621
10	7 35 0.22	2.6802	26 46 36.6	5.810
11	7 37 40.88	2.6750	26 40 42.3	5.998
12	7 40 21.22	2.6696	26 34 36.8	6.184
13	7 43 1.23	2.6640	26 28 20.2	6.369
14	7 45 40.90	2.6582	26 21 52.5	6.552
15	7 48 20.22	2.6524	26 15 13.9	6.734
16	7 50 59.19	2.6465	26 8 24.4	6.914
17	7 53 37.80	2.6405	26 1 24.2	7.092
18	7 56 16.05	2.6343	25 54 13.3	7.270
19	7 58 53.92	2.6279	25 46 51.8	7.446
20	8 1 31.40	2.6214	25 39 19.8	7.620
21	8 4 8.49	2.6148	25 31 37.4	7.792
22	8 6 45.18	2.6082	25 23 44.7	7.963
23	8 9 21.47	2.6014	N.25 15 41.8	8.132

THURSDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 11 57.35	2.5946	N.25 7 28.9	8.299
1	8 14 32.82	2.5876	24 59 6.0	8.465
2	8 17 7.86	2.5804	24 50 33.1	8.629
3	8 19 42.47	2.5733	24 41 50.5	8.790
4	8 22 16.65	2.5661	24 32 58.3	8.950
5	8 24 50.40	2.5588	24 23 56.5	9.109
6	8 27 23.71	2.5514	24 14 45.2	9.266
7	8 29 56.57	2.5439	24 5 24.6	9.420
8	8 32 28.98	2.5364	23 55 54.8	9.572
9	8 35 0.94	2.5288	23 46 15.9	9.723
10	8 37 32.44	2.5212	23 36 28.0	9.872
11	8 40 3.48	2.5135	23 26 31.2	10.019
12	8 42 34.06	2.5057	23 16 25.7	10.163
13	8 45 4.17	2.4979	23 6 11.6	10.307
14	8 47 33.81	2.4901	22 55 48.9	10.448
15	8 50 2.98	2.4822	22 45 17.8	10.587
16	8 52 31.68	2.4743	22 34 38.5	10.723
17	8 54 59.90	2.4664	22 23 51.0	10.858
18	8 57 27.65	2.4585	22 12 55.5	10.992
19	8 59 54.92	2.4505	22 1 52.0	11.123
20	9 2 21.71	2.4424	21 50 40.8	11.251
21	9 4 48.01	2.4343	21 39 21.9	11.378
22	9 7 13.83	2.4263	21 27 55.5	11.503
23	9 9 39.17	2.4183	21 16 21.6	11.626
24	9 12 4.03	2.4103	N.21 4 40.4	11.747

FRIDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 12 4.03	2.4103	N.21 4 40.4	11.747
1	9 14 28.41	2.4022	20 52 52.0	11.865
2	9 16 52.30	2.3942	20 40 56.6	11.989
3	9 19 15.71	2.3862	20 28 54.2	12.097
4	9 21 38.64	2.3781	20 16 45.0	12.209
5	9 24 1.08	2.3700	20 4 29.1	12.319
6	9 26 23.04	2.3620	19 52 6.7	12.427
7	9 28 44.52	2.3540	19 39 37.8	12.534
8	9 31 5.52	2.3461	19 27 2.6	12.639
9	9 33 26.05	2.3382	19 14 21.1	12.742
10	9 35 46.10	2.3302	19 1 33.6	12.842
11	9 38 5.68	2.3223	18 48 40.1	12.940
12	9 40 24.78	2.3144	18 35 40.8	13.036
13	9 42 43.41	2.3066	18 22 35.8	13.131
14	9 45 1.57	2.2988	18 9 25.1	13.224
15	9 47 19.27	2.2911	17 56 8.9	13.314
16	9 49 36.50	2.2833	17 42 47.4	13.402
17	9 51 53.27	2.2756	17 29 20.6	13.489
18	9 54 9.57	2.2679	17 15 48.7	13.573
19	9 56 25.41	2.2603	17 2 11.8	13.656
20	9 58 40.81	2.2529	16 48 30.0	13.737
21	10 0 55.76	2.2454	16 34 43.4	13.816
22	10 3 10.26	2.2379	16 20 52.1	13.893
23	10 5 24.31	2.2305	N.16 6 56.3	13.967

SATURDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 7 37.92	2.2232	N.15 52 56.1	14.039
1	10 9 51.09	2.2159	15 38 51.6	14.111
2	10 12 3.83	2.2086	15 24 42.8	14.181
3	10 14 16.13	2.2014	15 10 29.9	14.248
4	10 16 28.00	2.1944	14 56 13.1	14.313
5	10 18 39.46	2.1875	14 41 52.4	14.377
6	10 20 50.50	2.1805	14 27 27.9	14.438
7	10 23 1.12	2.1736	14 12 59.8	14.498
8	10 25 11.33	2.1667	13 58 28.1	14 557
9	10 27 21.13	2.1599	13 43 52.9	14.614
10	10 29 30.52	2.1533	13 29 14.4	14.669
11	10 31 39.52	2.1467	13 14 32.6	14.722
12	10 33 48.12	2.1401	12 59 47.7	14.773
13	10 35 56.33	2.1336	12 44 59.8	14.823
14	10 38 4.15	2.1272	12 30 9.0	14.871
15	10 40 11.59	2.1209	12 15 15.3	14.917
16	10 42 18.66	2.1146	12 0 18.9	14.962
17	10 44 25.35	2.1084	11 45 19.9	15.004
18	10 46 31.67	2.1023	11 30 18.4	15.045
19	10 48 37.63	2.0963	11 15 14.5	15.085
20	10 50 43.23	2.0903	11 0 8.2	15.123
21	10 52 48.47	2.0844	10 44 59.7	15.159
22	10 54 53.36	2.0787	10 29 49.1	15.194
23	10 56 57.91	2.0730	10 14 36.4	15.227
24	10 59 2.12	2.0673	N. 9 59 21.8	15.258

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 13.					TUESDAY 15.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 59 2.12	2.0673	N. 9 59 21.8	15.258	0	12 33 22.62	1.8959	S. 2 23 14.4	15.217
1	11 1 5.99	2.0618	9 44 5.4	15.288	1	12 35 16.33	1.8944	2 38 26.6	15.189
2	11 3 9.54	2.0564	9 28 47.2	15.317	2	12 37 9.95	1.8930	2 53 37.1	15.160
3	11 5 12.76	2.0510	9 13 27.3	15.345	3	12 39 3.49	1.8916	3 8 45.8	15.130
4	11 7 15.66	2.0457	8 58 5.8	15.370	4	12 40 56.95	1.8903	3 23 52.7	15.099
5	11 9 18.24	2.0404	8 42 42.9	15.393	5	12 42 50.33	1.8891	3 38 57.7	15.067
6	11 11 20.51	2.0352	8 27 18.6	15.416	6	12 44 43.64	1.8879	3 54 0.7	15.034
7	11 13 22.47	2.0302	8 11 53.0	15.437	7	12 46 36.88	1.8869	4 9 1.8	15.001
8	11 15 24.14	2.0253	7 56 26.2	15.457	8	12 48 30.07	1.8860	4 24 0.8	14.966
9	11 17 25.51	2.0204	7 40 58.2	15.475	9	12 50 23.20	1.8851	4 38 57.7	14.930
10	11 19 26.59	2.0156	7 25 29.2	15.492	10	12 52 16.28	1.8842	4 53 52.4	14.894
11	11 21 27.38	2.0108	7 9 59.2	15.508	11	12 54 9.31	1.8834	5 8 45.0	14.857
12	11 23 27.89	2.0062	6 54 28.3	15.522	12	12 56 2.29	1.8827	5 23 35.3	14.819
13	11 25 28.12	2.0017	6 38 56.6	15.534	13	12 57 55.24	1.8822	5 38 23.3	14.780
14	11 27 28.09	1.9972	6 23 24.2	15.545	14	12 59 48.16	1.8817	5 53 8.9	14.740
15	11 29 27.79	1.9928	6 7 51.2	15.555	15	13 1 41.04	1.8812	6 7 52.1	14.700
16	11 31 27.23	1.9886	5 52 17.6	15.564	16	13 3 33.90	1.8808	6 22 32.9	14.658
17	11 33 26.42	1.9844	5 36 43.5	15.571	17	13 5 26.74	1.8806	6 37 11.1	14.616
18	11 35 25.36	1.9803	5 21 9.1	15.577	18	13 7 19.57	1.8804	6 51 46.8	14.573
19	11 37 24.05	1.9763	5 5 34.3	15.582	19	13 9 12.39	1.8803	7 6 19.9	14.529
20	11 39 22.51	1.9723	4 49 59.2	15.586	20	13 11 5.20	1.8802	7 20 50.3	14.484
21	11 41 20.73	1.9684	4 34 24.0	15.588	21	13 12 58.01	1.8802	7 35 18.0	14.439
22	11 43 18.72	1.9646	4 18 48.7	15.588	22	13 14 50.82	1.8802	7 49 43.0	14.392
23	11 45 16.49	1.9609	N. 4 3 13.4	15.588	23	13 16 43.64	1.8803	S. 8 4 5.1	14.345
	MONDAY 14.					WEDNESDAY 16.			
0	11 47 14.03	1.9573	N. 3 47 38.1	15.587	0	13 18 36.46	1.8805	S. 8 18 24.4	14.297
1	11 49 11.36	1.9538	3 32 2.9	15.585	1	13 20 29.30	1.8808	8 32 40.8	14.248
2	11 51 8.49	1.9504	3 16 27.9	15.580	2	13 22 22.16	1.8812	8 46 54.2	14.199
3	11 53 5.41	1.9470	3 0 53.3	15.574	3	13 24 15.05	1.8817	9 1 4.7	14.150
4	11 55 2.13	1.9438	2 45 19.0	15.568	4	13 26 7.97	1.8822	9 15 12.2	14.099
5	11 56 58.66	1.9406	2 29 45.1	15.562	5	13 28 0.92	1.8827	9 29 16.6	14.047
6	11 58 55.00	1.9374	2 14 11.6	15.553	6	13 29 53.90	1.8834	9 43 17.8	13.994
7	12 0 51.15	1.9344	1 58 38.7	15.543	7	13 31 46.93	1.8842	9 57 15.9	13.941
8	12 2 47.13	1.9316	1 43 6.4	15.532	8	13 33 40.00	1.8849	10 11 10.7	13.887
9	12 4 42.94	1.9287	1 27 34.8	15.520	9	13 35 33.12	1.8857	10 25 2.3	13.832
10	12 6 38.58	1.9259	1 12 4.0	15.507	10	13 37 26.29	1.8867	10 38 50.6	13.777
11	12 8 34.05	1.9232	0 56 33.9	15.494	11	13 39 19.52	1.8877	10 52 35.5	13.720
12	12 10 29.36	1.9206	0 41 4.7	15.479	12	13 41 12.81	1.8888	11 6 17.0	13.663
13	12 12 24.52	1.9182	0 25 36.4	15.462	13	13 43 6.17	1.8899	11 19 55.1	13.606
14	12 14 19.54	1.9157	N. 0 10 9.2	15.444	14	13 44 59.60	1.8910	11 33 29.7	13.547
15	12 16 14.41	1.9133	S. 0 5 16.9	15.426	15	13 46 53.09	1.8922	11 47 0.7	13.487
16	12 18 9.14	1.9111	0 20 41.9	15.407	16	13 48 46.66	1.8935	12 0 28.1	13.427
17	12 20 3.74	1.9089	0 36 5.8	15.387	17	13 50 40.31	1.8949	12 13 51.9	13.367
18	12 21 58.21	1.9068	0 51 28.4	15.366	18	13 52 34.05	1.8964	12 27 12.1	13.306
19	12 23 52.56	1.9048	1 6 49.7	15.343	19	13 54 27.88	1.8979	12 40 28.6	13.243
20	12 25 46.79	1.9029	1 22 9.6	15.320	20	13 56 21.80	1.8994	12 53 41.3	13.180
21	12 27 40.91	1.9011	1 37 28.1	15.296	21	13 58 15.81	1.9010	13 6 50.2	13.117
22	12 29 34.92	1.8993	1 52 45.1	15.271	22	14 0 9.92	1.9027	13 19 55.3	13.053
23	12 31 28.82	1.8975	2 8 0.6	15.244	23	14 2 4.14	1.9045	13 32 56.5	12.987
24	12 33 22.62	1.8959	S. 2 23 14.4	15.217	24	14 3 58.46	1.9063	S. 13 45 53.7	12.921

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 3 58.46	1.9063	S. 13 45 53.7	12.921
1	14 5 52.89	1.9082	13 58 47.0	12.855
2	14 7 47.41	1.9101	14 11 36.3	12.787
3	14 9 42.10	1.9120	14 24 21.5	12.719
4	14 11 36.88	1.9141	14 37 2.6	12.650
5	14 13 31.79	1.9162	14 49 39.5	12.581
6	14 15 26.82	1.9183	15 2 12.3	12.512
7	14 17 21.98	1.9205	15 14 40.9	12.441
8	14 19 17.28	1.9227	15 27 5.2	12.368
9	14 21 12.71	1.9250	15 39 25.1	12.296
10	14 23 8.28	1.9274	15 51 40.7	12.223
11	14 25 4.00	1.9299	16 3 51.9	12.149
12	14 26 59.87	1.9324	16 15 58.6	12.075
13	14 28 55.89	1.9349	16 28 0.9	12.000
14	14 30 52.06	1.9374	16 39 58.6	11.924
15	14 32 48.38	1.9400	16 51 51.8	11.848
16	14 34 44.86	1.9427	17 3 40.4	11.771
17	14 36 41.50	1.9454	17 15 24.3	11.693
18	14 38 38.31	1.9482	17 27 3.5	11.614
19	14 40 35.28	1.9510	17 38 38.0	11.535
20	14 42 32.43	1.9539	17 50 7.7	11.454
21	14 44 29.75	1.9568	18 1 32.5	11.373
22	14 46 27.25	1.9597	18 12 52.5	11.292
23	14 48 24.92	1.9627	S. 18 24 7.6	11.210

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 50 22.77	1.9657	S. 18 35 17.7	11.127
1	14 52 20.80	1.9688	18 46 22.8	11.043
2	14 54 19.02	1.9719	18 57 22.9	10.959
3	14 56 17.43	1.9751	19 8 17.9	10.874
4	14 58 16.03	1.9783	19 19 7.8	10.788
5	15 0 14.82	1.9815	19 29 52.5	10.702
6	15 2 13.81	1.9848	19 40 32.0	10.615
7	15 4 13.00	1.9881	19 51 6.3	10.527
8	15 6 12.38	1.9913	20 1 35.2	10.438
9	15 8 11.96	1.9947	20 11 58.8	10.348
10	15 10 11.74	1.9981	20 22 17.0	10.258
11	15 12 11.73	2.0016	20 32 29.8	10.167
12	15 14 11.93	2.0051	20 42 37.1	10.076
13	15 16 12.34	2.0086	20 52 38.9	9.984
14	15 18 12.96	2.0120	21 2 35.1	9.891
15	15 20 13.78	2.0155	21 12 25.8	9.798
16	15 22 14.82	2.0191	21 22 10.8	9.703
17	15 24 16.07	2.0227	21 31 50.1	9.608
18	15 26 17.54	2.0263	21 41 23.7	9.512
19	15 28 19.23	2.0300	21 50 51.5	9.415
20	15 30 21.14	2.0336	22 0 13.5	9.318
21	15 32 23.26	2.0373	22 9 29.7	9.221
22	15 34 25.61	2.0410	22 18 40.0	9.122
23	15 36 28.18	2.0447	22 27 44.3	9.022
24	15 38 30.98	2.0485	S. 22 36 42.6	8.922

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 38 30.98	2.0485	S. 22 36 42.6	8.922
1	15 40 34.00	2.0522	22 45 34.9	8.821
2	15 42 37.25	2.0560	22 54 21.1	8.719
3	15 44 40.72	2.0597	23 3 1.2	8.617
4	15 46 44.42	2.0635	23 11 35.2	8.514
5	15 48 48.34	2.0673	23 20 2.9	8.410
6	15 50 52.49	2.0711	23 28 24.4	8.306
7	15 52 56.87	2.0749	23 36 39.6	8.201
8	15 55 1.48	2.0787	23 44 48.5	8.095
9	15 57 6.31	2.0824	23 52 51.0	7.988
10	15 59 11.37	2.0863	24 0 47.1	7.881
11	16 1 16.67	2.0901	24 8 36.7	7.773
12	16 3 22.19	2.0939	24 16 19.9	7.665
13	16 5 27.94	2.0977	24 23 56.5	7.555
14	16 7 33.92	2.1016	24 31 26.5	7.445
15	16 9 40.13	2.1054	24 38 49.9	7.334
16	16 11 46.57	2.1092	24 46 6.6	7.223
17	16 13 53.23	2.1129	24 53 16.6	7.111
18	16 16 0.12	2.1167	25 0 19.9	6.998
19	16 18 7.24	2.1205	25 7 16.4	6.884
20	16 20 14.58	2.1242	25 14 6.0	6.770
21	16 22 22.15	2.1280	25 20 48.8	6.655
22	16 24 29.94	2.1317	25 27 24.6	6.539
23	16 26 37.95	2.1354	S. 25 33 53.5	6.423

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 28 46.19	2.1391	S. 25 40 15.4	6.306
1	16 30 54.65	2.1428	25 46 30.2	6.189
2	16 33 3.33	2.1464	25 52 38.0	6.071
3	16 35 12.22	2.1500	25 58 38.7	5.952
4	16 37 21.33	2.1537	26 4 32.2	5.832
5	16 39 30.66	2.1573	26 10 18.5	5.712
6	16 41 40.20	2.1608	26 15 57.6	5.591
7	16 43 49.96	2.1643	26 21 29.4	5.469
8	16 45 59.92	2.1678	26 26 53.9	5.347
9	16 48 10.09	2.1713	26 32 11.0	5.224
10	16 50 20.47	2.1747	26 37 20.8	5.101
11	16 52 31.05	2.1780	26 42 23.1	4.977
12	16 54 41.83	2.1813	26 47 18.0	4.853
13	16 56 52.81	2.1847	26 52 5.4	4.727
14	16 59 3.99	2.1880	26 56 45.2	4.601
15	17 1 15.37	2.1912	27 1 17.5	4.475
16	17 3 26.94	2.1944	27 5 42.2	4.348
17	17 5 38.70	2.1975	27 9 59.2	4.220
18	17 7 50.64	2.2006	27 14 8.6	4.092
19	17 10 2.77	2.2037	27 18 10.3	3.963
20	17 12 15.08	2.2067	27 22 4.2	3.834
21	17 14 27.57	2.2096	27 25 50.4	3.704
22	17 16 40.23	2.2125	27 29 28.7	3.573
23	17 18 53.07	2.2154	27 32 59.2	3.443
24	17 21 6.08	2.2182	S. 27 36 21.9	3.319

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 21 6.08	2.2182	S.27 36 21.9	3.312
1	17 23 19.25	2.2209	27 39 36.7	3.180
2	17 25 32.59	2.2237	27 42 43.5	3.048
3	17 27 46.09	2.2263	27 45 42.4	2.915
4	17 29 59.74	2.2288	27 48 33.3	2.782
5	17 32 13.54	2.2313	27 51 16.2	2.648
6	17 34 27.49	2.2338	27 53 51.0	2.513
7	17 36 41.59	2.2361	27 56 17.8	2.379
8	17 38 55.82	2.2384	27 58 36.5	2.244
9	17 41 10.19	2.2407	28 0 47.1	2.108
10	17 43 24.70	2.2428	28 2 49.5	1.973
11	17 45 39.33	2.2449	28 4 43.8	1.837
12	17 47 54.09	2.2470	28 6 29.9	1.700
13	17 50 8.97	2.2489	28 8 7.8	1.563
14	17 52 23.96	2.2508	28 9 37.4	1.425
15	17 54 39.07	2.2527	28 10 58.8	1.287
16	17 56 54.29	2.2545	28 12 11.9	1.149
17	17 59 9.61	2.2562	28 13 16.7	1.011
18	18 1 25.03	2.2578	28 14 13.2	0.872
19	18 3 40.55	2.2593	28 15 1.4	0.733
20	18 5 56.15	2.2608	28 15 41.2	0.593
21	18 8 11.84	2.2622	28 16 12.6	0.454
22	18 10 27.61	2.2634	28 16 35.7	0.315
23	18 12 43.45	2.2647	S.28 16 50.4	0.174

TUESDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 14 59.37	2.2659	S.28 16 56.6	− 0.033
1	18 17 15.36	2.2670	28 16 54.4	+ 0.107
2	18 19 31.41	2.2679	28 16 43.8	0.247
3	18 21 47.51	2.2688	28 16 24.8	0.388
4	18 24 3.67	2.2697	28 15 57.3	0.529
5	18 26 19.88	2.2705	28 15 21.3	0.671
6	18 28 36.13	2.2712	28 14 36.8	0.812
7	18 30 52.42	2.2718	28 13 43.8	0.953
8	18 33 8.74	2.2723	28 12 42.4	1.094
9	18 35 25.10	2.2728	28 11 32.5	1.236
10	18 37 41.48	2.2731	28 10 14.1	1.378
11	18 39 57.87	2.2733	28 8 47.1	1.520
12	18 42 14.28	2.2736	28 7 11.7	1.661
13	18 44 30.70	2.2737	28 5 27.8	1.803
14	18 46 47.12	2.2738	28 3 35.3	1.946
15	18 49 3.55	2.2738	28 1 34.3	2.088
16	18 51 19.98	2.2736	27 59 24.8	2.229
17	18 53 36.39	2.2734	27 57 6.8	2.371
18	18 55 52.79	2.2732	27 54 40.3	2.512
19	18 58 9.17	2.2728	27 52 5.3	2.654
20	19 0 25.52	2.2723	27 49 21.8	2.796
21	19 2 41.85	2.2719	27 46 29.8	2.937
22	19 4 58.15	2.2713	27 43 29.3	3.079
23	19 7 14.41	2.2706	27 40 20.3	3.220
24	19 9 30.62	2.2698	S.27 37 2.9	3.361

WEDNESDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 9 30.62	2.2698	S.27 37 2.9	3.361
1	19 11 46.79	2.2691	27 33 37.0	3.509
2	19 14 2.91	2.2682	27 30 2.7	3.649
3	19 16 18.97	2.2672	27 26 19.9	3.783
4	19 18 34.97	2.2661	27 22 28.7	3.923
5	19 20 50.90	2.2650	27 18 29.1	4.064
6	19 23 6.77	2.2639	27 14 21.0	4.205
7	19 25 22.57	2.2626	27 10 4.5	4.344
8	19 27 38.28	2.2612	27 5 39.7	4.483
9	19 29 53.91	2.2598	27 1 6.6	4.622
10	19 32 9.46	2.2584	26 56 25.1	4.761
11	19 34 24.92	2.2568	26 51 35.3	4.898
12	19 36 40.28	2.2552	26 46 37.3	5.036
13	19 38 55.55	2.2536	26 41 31.0	5.174
14	19 41 10.71	2.2519	26 36 16.4	5.312
15	19 43 25.77	2.2501	26 30 53.5	5.450
16	19 45 40.72	2.2482	26 25 22.4	5.587
17	19 47 55.55	2.2463	26 19 43.1	5.723
18	19 50 10.27	2.2443	26 13 55.7	5.858
19	19 52 24.87	2.2422	26 8 0.1	5.994
20	19 54 39.34	2.2401	26 1 56.4	6.129
21	19 56 53.68	2.2380	25 55 44.7	6.263
22	19 59 7.90	2.2358	25 49 24.9	6.397
23	20 1 21.98	2.2335	S.25 42 57.1	6.531

THURSDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 3 35.92	2.2312	S.25 36 21.2	6.664
1	20 5 49.72	2.2288	25 29 37.4	6.796
2	20 8 3.38	2.2264	25 22 45.7	6.928
3	20 10 16.89	2.2240	25 15 46.1	7.059
4	20 12 30.26	2.2215	25 8 38.6	7.190
5	20 14 43.47	2.2189	25 1 23.3	7.320
6	20 16 56.53	2.2163	24 54 0.2	7.450
7	20 19 9.43	2.2137	24 46 29.3	7.579
8	20 21 22.18	2.2111	24 38 50.7	7.707
9	20 23 34.76	2.2084	24 31 4.5	7.834
10	20 25 47.18	2.2056	24 23 10.6	7.960
11	20 27 59.43	2.2029	24 15 9.1	8.086
12	20 30 11.52	2.2001	24 7 0.1	8.212
13	20 32 23.44	2.1972	23 58 43.5	8.339
14	20 34 35.18	2.1943	23 50 19.4	8.463
15	20 36 46.75	2.1913	23 41 47.9	8.587
16	20 38 58.14	2.1884	23 33 9.0	8.710
17	20 41 9.36	2.1855	23 24 22.7	8.832
18	20 43 20.40	2.1825	23 15 29.1	8.954
19	20 45 31.26	2.1795	23 6 28.2	9.075
20	20 47 41.94	2.1764	22 57 20.1	9.194
21	20 49 52.43	2.1733	22 48 4.9	9.313
22	20 52 2.74	2.1703	22 38 42.5	9.432
23	20 54 12.87	2.1673	22 29 13.0	9.550
24	20 56 22.82	2.1642	S.22 19 36.5	9.667

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 56 22.82	2.1642	S. 22 19 36.5	9.667
1	20 58 32.58	2.1611	22 9 53.0	9.783
2	21 0 42.15	2.1580	22 0 2.5	9.898
3	21 2 51.54	2.1549	21 50 5.2	10.013
4	21 5 0.74	2.1517	21 40 1.0	10.127
5	21 7 9.75	2.1485	21 29 50.0	10.240
6	21 9 18.56	2.1453	21 19 32.2	10.352
7	21 11 27.19	2.1422	21 9 7.7	10.463
8	21 13 35.63	2.1391	20 58 36.6	10.573
9	21 15 43.88	2.1359	20 47 59.0	10.682
10	21 17 51.94	2.1328	20 37 14.8	10.791
11	21 19 59.81	2.1297	20 26 24.1	10.898
12	21 22 7.50	2.1266	20 15 27.0	11.004
13	21 24 15.00	2.1234	20 4 23.6	11.110
14	21 26 22.30	2.1202	19 53 13.8	11.216
15	21 28 29.42	2.1171	19 41 57.7	11.320
16	21 30 36.35	2.1139	19 30 35.4	11.422
17	21 32 43.09	2.1108	19 19 7.0	11.524
18	21 34 49.65	2.1077	19 7 32.5	11.625
19	21 36 56.02	2.1047	18 55 52.0	11.725
20	21 39 2.21	2.1017	18 44 5.5	11.825
21	21 41 8.22	2.0987	18 32 13.0	11.924
22	21 43 14.05	2.0956	18 20 14.6	12.021
23	21 45 19.69	2.0925	S. 18 8 10.5	12.116

SATURDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 47 25.15	2.0895	S. 17 56 0.7	12.211
1	21 49 30.43	2.0866	17 43 45.2	12.306
2	21 51 35.54	2.0837	17 31 24.0	12.399
3	21 53 40.47	2.0808	17 18 57.3	12.491
4	21 55 45.23	2.0779	17 6 25.1	12.582
5	21 57 49.82	2.0750	16 53 47.4	12.673
6	21 59 54.23	2.0722	16 41 4.3	12.762
7	22 1 58.48	2.0694	16 28 15.9	12.851
8	22 4 2.56	2.0666	16 15 22.2	12.938
9	22 6 6.47	2.0638	16 2 23.4	13.024
10	22 8 10.22	2.0611	15 49 19.4	13.109
11	22 10 13.81	2.0584	15 36 10.3	13.193
12	22 12 17.23	2.0558	15 22 56.3	13.275
13	22 14 20.50	2.0532	15 9 37.3	13.357
14	22 16 23.62	2.0507	14 56 13.4	13.438
15	22 18 26.58	2.0481	14 42 44.7	13.518
16	22 20 29.39	2.0457	14 29 11.3	13.597
17	22 22 32.06	2.0433	14 15 33.1	13.675
18	22 24 34.59	2.0409	14 1 50.3	13.751
19	22 26 36.97	2.0385	13 48 3.0	13.827
20	22 28 39.21	2.0362	13 34 11.1	13.902
21	22 30 41.32	2.0340	13 20 14.8	13.974
22	22 32 43.29	2.0318	13 6 14.2	14.046
23	22 34 45.13	2.0296	12 52 9.3	14.117
24	22 36 46.84	2.0275	S. 12 38 0.1	14.187

SUNDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 36 46.84	2.0275	S. 12 38 0.1	14.187
1	22 38 48.43	2.0254	12 23 46.8	14.256
2	22 40 49.89	2.0233	12 9 29.4	14.324
3	22 42 51.23	2.0214	11 55 7.9	14.391
4	22 44 52.46	2.0196	11 40 42.5	14.456
5	22 46 53.58	2.0177	11 26 13.2	14.520
6	22 48 54.58	2.0158	11 11 40.1	14.583
7	22 50 55.47	2.0140	10 57 3.3	14.645
8	22 52 56.26	2.0124	10 42 22.7	14.707
9	22 54 56.96	2.0108	10 27 38.5	14.766
10	22 56 57.56	2.0092	10 12 50.8	14.824
11	22 58 58.07	2.0076	9 57 59.6	14.882
12	23 0 58.48	2.0061	9 43 4.9	14.939
13	23 2 58.80	2.0048	9 28 6.9	14.994
14	23 4 59.05	2.0035	9 13 5.6	15.047
15	23 6 59.22	2.0022	8 58 1.2	15.100
16	23 8 59.31	2.0009	8 42 53.6	15.152
17	23 10 59.33	1.9998	8 27 42.9	15.202
18	23 12 59.29	1.9987	8 12 29.3	15.252
19	23 14 59.18	1.9977	7 57 12.7	15.300
20	23 16 59.01	1.9967	7 41 53.3	15.347
21	23 18 58.78	1.9957	7 26 31.1	15.393
22	23 20 58.50	1.9949	7 11 6.2	15.438
23	23 22 58.17	1.9942	S. 6 55 38.6	15.481

MONDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 24 57.80	1.9935	S. 6 40 8.5	15.522
1	23 26 57.39	1.9928	6 24 35.9	15.563
2	23 28 56.94	1.9922	6 9 0.9	15.603
3	23 30 56.46	1.9917	5 53 23.5	15.642
4	23 32 55.95	1.9913	5 37 43.8	15.680
5	23 34 55.42	1.9910	5 22 1.9	15.715
6	23 36 54.87	1.9907	5 6 18.0	15.749
7	23 38 54.30	1.9904	4 50 32.0	15.783
8	23 40 53.72	1.9903	4 34 44.0	15 816
9	23 42 53.14	1.9902	4 18 54.1	15.847
10	23 44 52.55	1.9902	4 3 2.4	15.877
11	23 46 51.97	1.9903	3 47 8.9	15.906
12	23 48 51.39	1.9904	3 31 13.7	15.933
13	23 50 50.82	1.9906	3 15 16.9	15.959
14	23 52 50.27	1.9909	2 59 18.6	15.984
15	23 54 49.73	1.9912	2 43 18.8	16.007
16	23 56 49.22	1.9917	2 27 17.7	16.029
17	23 58 48.74	1.9923	2 11 15.3	16.051
18	0 0 48.30	1.9929	1 55 11.6	16.071
19	0 2 47.89	1.9936	1 39 6.8	16.089
20	0 4 47.53	1.9943	1 23 0.9	16.107
21	0 6 47.21	1.9951	1 6 54.0	16.123
22	0 8 46.94	1.9960	0 50 46.2	16.137
23	0 10 46.73	1.9970	0 34 37.6	16.150
24	0 12 46.58	1.9981	S. 0 18 28.2	16.162

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 12 46.58	1.9981	S. 0 18 28.2	16.162
1	0 14 46.50	1.9992	S. 0 2 18.1	16.173
2	0 16 46.49	2.0004	N. 0 13 52.6	16.182
3	0 18 46.55	2.0017	0 30 3.8	16.191
4	0 20 46.69	2.0031	0 46 15.5	16.198
5	0 22 46.92	2.0045	1 2 27.6	16.203
6	0 24 47.23	2.0060	1 18 39.9	16.207
7	0 26 47.64	2.0076	1 34 52.4	16.210
8	0 28 48.15	2.0093	1 51 5.1	16.212
9	0 30 48.76	2.0111	2 7 17.9	16.212
10	0 32 49.48	2.0130	2 23 30.6	16.211
11	0 34 50.32	2.0149	2 39 43.2	16.208
12	0 36 51.27	2.0169	2 55 55.5	16.204
13	0 38 52.34	2.0190	3 12 7.6	16.199
14	0 40 53.55	2.0212	3 28 19.4	16.192
15	0 42 54.89	2.0235	3 44 30.7	16.183
16	0 44 56.37	2.0258	4 0 41.4	16.174
17	0 46 57.99	2.0282	4 16 51.6	16.164
18	0 48 59.76	2.0307	4 33 1.1	16.152
19	0 51 1.68	2.0333	4 49 9.8	16.138
20	0 53 3.76	2.0360	5 5 17.7	16.123
21	0 55 6.00	2.0388	5 21 24.6	16.107
22	0 57 8.41	2.0416	5 37 30.5	16.089
23	0 59 10.99	2.0445	N. 5 53 35.3	16.070

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 1 13.75	2.0475	N. 6 9 38.9	16.049
1	1 3 16.69	2.0505	6 25 41.2	16.027
2	1 5 19.81	2.0537	6 41 42.1	16.003
3	1 7 23.13	2.0570	6 57 41.6	15.978
4	1 9 26.65	2.0603	7 13 39.5	15.952
5	1 11 30.37	2.0637	7 29 35.8	15.924
6	1 13 34.29	2.0671	7 45 30.4	15.895
7	1 15 38.42	2.0707	8 1 23.2	15.864
8	1 17 42.77	2.0744	8 17 14.1	15.832
9	1 19 47.35	2.0782	8 33 3.0	15.798
10	1 21 52.15	2.0819	8 48 49.8	15.763
11	1 23 57.18	2.0858	9 4 34.5	15.726
12	1 26 2.45	2.0898	9 20 16.9	15.688
13	1 28 7.96	2.0938	9 35 57.0	15.648
14	1 30 13.71	2.0979	9 51 34.7	15.607
15	1 32 19.71	2.1021	10 7 9.8	15.563
16	1 34 25.96	2.1063	10 22 42.3	15.519
17	1 36 32.47	2.1107	10 38 12.1	15.473
18	1 38 39.25	2.1152	10 53 39.1	15.426
19	1 40 46.29	2.1197	11 9 3.2	15.377
20	1 42 53.61	2.1243	11 24 24.4	15.327
21	1 45 1.21	2.1290	11 39 42.5	15.275
22	1 47 9.09	2.1337	11 54 57.4	15.221
23	1 49 17.26	2.1385	12 10 9.0	15.166
24	1 51 25.71	2.1433	N. 12 25 17.3	15.109

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 51 25.71	2.1433	N. 12 25 17.3	15.109
1	1 53 34.46	2.1483	12 40 22.1	15.051
2	1 55 43.51	2.1534	12 55 23.4	14.992
3	1 57 52.87	2.1586	13 10 21.1	14.930
4	2 0 2.54	2.1637	13 25 15.0	14.867
5	2 2 12.52	2.1689	13 40 5.1	14.803
6	2 4 22.81	2.1743	13 54 51.3	14.737
7	2 6 33.43	2.1797	14 9 33.5	14.668
8	2 8 44.37	2.1851	14 24 11.5	14.598
9	2 10 55.64	2.1906	14 38 45.3	14.527
10	2 13 7.24	2.1962	14 53 14.8	14.455
11	2 15 19.18	2.2018	15 7 39.9	14.380
12	2 17 31.46	2.2075	15 22 0.4	14.304
13	2 19 44.08	2.2133	15 36 16.3	14.227
14	2 21 57.05	2.2192	15 50 27.6	14.148
15	2 24 10.38	2.2251	16 4 34.1	14.067
16	2 26 24.06	2.2310	16 18 35.6	13.983
17	2 28 38.10	2.2370	16 32 32.1	13.899
18	2 30 52.50	2.2431	16 46 23.5	13.813
19	2 33 7.27	2.2492	17 0 9.7	13.726
20	2 35 22.40	2.2553	17 13 50.6	13.636
21	2 37 37.90	2.2614	17 27 26.0	13.544
22	2 39 53.77	2.2677	17 40 55.9	13.452
23	2 42 10.02	2.2740	N. 17 54 20.2	13.358

FRIDAY, SEPTEMBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 44 26.65	2.2803	N. 18 7 38.9	13.262

PHASES OF THE MOON.

		d	h	m
☾ Last Quarter . .	Aug.	4	16	23.3
● New Moon		11	8	47.7
☽ First Quarter. . . .		18	21	51.8
○ Full Moon		26	20	42.8

		d	h
☾ Perigee	Aug.	8	9.7
☾ Apogee		20	7.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Aquilæ	W.	59° 30′ 44″	3776	60° 46′ 11″	3729	62° 2′ 27″	3685	63° 19′ 30″	3644
	α Arietis	E.	44 49 17	2691	43 12 25	2689	41 35 30	2688	39 58 34	2687
	Jupiter	E.	64 45 49	2644	63 7 54	2635	61 29 47	2627	59 51 29	2619
	Aldebaran	E.	75 12 21	2644	73 34 26	2636	71 56 20	2629	70 18 5	2621
2	α Aquilæ	W.	69 54 56	3475	71 15 48	3447	72 37 11	3421	73 59 4	3397
	Fomalhaut	W.	38 26 36	3053	39 55 43	3009	41 25 45	2968	42 56 38	2930
	Jupiter	E.	51 37 10	2578	49 57 45	2569	48 18 8	2561	46 38 20	2554
	Aldebaran	E.	62 4 20	2587	60 25 7	2581	58 45 46	2574	57 6 16	2569
	Sun	E.	124 7 5	2859	122 33 54	2849	121 0 30	2839	119 26 53	2829
3	α Aquilæ	W.	80 54 48	3298	82 19 2	3282	83 43 34	3269	85 8 22	3255
	Fomalhaut	W.	50 41 53	2781	52 16 46	2756	53 52 11	2735	55 28 5	2713
	Jupiter	E.	38 16 45	2517	36 35 56	2511	34 54 58	2505	33 13 52	2499
	Aldebaran	E.	48 47 1	2546	47 6 52	2543	45 26 39	2541	43 46 23	2540
	Sun	E.	111 35 33	2779	110 0 38	2770	108 25 31	2760	106 50 10	2750
4	α Aquilæ	W.	92 15 45	3209	93 41 43	3204	95 7 48	3200	96 33 57	3198
	Fomalhaut	W.	63 34 10	2624	65 12 33	2608	66 51 17	2593	68 30 21	2579
	α Pegasi	W.	44 31 54	3076	46 0 33	3027	47 30 12	2983	49 0 46	2942
	Aldebaran	E.	35 25 5	2551	33 45 3	2560	32 5 13	2571	30 25 38	2586
	Pollux	E.	78 16 43	2378	76 32 36	2369	74 48 17	2361	73 3 46	2352
	Sun	E.	98 50 17	2702	97 13 40	2693	95 36 51	2684	93 59 50	2675
5	Fomalhaut	W.	76 50 17	2517	78 31 6	2507	80 12 9	2497	81 53 27	2487
	α Pegasi	W.	56 45 17	2781	58 20 10	2755	59 55 37	2731	61 31 36	2709
	Pollux	E.	64 18 6	2311	62 32 22	2303	60 46 27	2295	59 0 20	2287
	Sun	E.	85 51 39	2630	84 13 25	2621	82 34 59	2613	80 56 22	2604
6	Fomalhaut	W.	90 23 2	2447	92 5 30	2441	93 48 6	2436	95 30 50	2430
	α Pegasi	W.	69 38 17	2618	71 16 48	2604	72 55 38	2590	74 34 47	2577
	α Arietis	W.	26 3 58	2506	27 45 3	2470	29 26 58	2440	31 9 36	2413
	Pollux	E.	50 7 0	2251	48 19 49	2245	46 32 28	2238	44 44 57	2232
	Sun	E.	72 40 30	2566	71 0 49	2559	69 20 58	2253	67 40 58	2545
7	α Pegasi	W.	82 54 24	2530	84 34 56	2522	86 15 38	2517	87 56 28	2512
	α Arietis	W.	39 50 54	2320	41 36 24	2307	43 22 13	2296	45 8 19	2285
	Pollux	E.	35 45 14	2206	33 56 55	2201	32 8 29	2197	30 19 57	2194
	Sun	E.	59 18 49	2518	57 38 1	2514	55 57 7	2510	54 16 7	2507
8	α Arietis	W.	54 2 12	2247	55 49 30	2242	57 36 55	2238	59 24 26	2234
	Jupiter	W.	32 17 5	2245	34 4 26	2239	35 51 55	2235	37 39 30	2232
	Sun	E.	45 50 8	2496	44 8 49	2496	42 27 30	2496	40 46 11	2497
9	α Arietis	W.	68 23 3	2227	70 10 51	2227	71 58 38	2228	73 46 24	2230
	Jupiter	W.	46 38 19	2226	48 26 8	2226	50 13 57	2227	52 1 44	2229
	Aldebaran	W.	38 11 22	2311	39 57 6	2302	41 43 2	2296	43 29 8	2291
	Sun	E.	32 20 21	2515	30 39 29	2522	28 58 47	2531	27 18 17	2542
13	Sun	W.	21 26 53	2870	22 59 50	2874	24 32 42	2880	26 5 26	2889
	Spica	E.	40 33 35	2462	38 51 29	2478	37 9 45	2493	35 28 22	2510
	Antares	E.	86 25 55	2457	84 43 41	2472	83 1 48	2487	81 20 16	2502

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Aquilæ	W.	64° 37′ 17″	3605	65° 55′ 46″	3570	67° 14′ 53″	3536	68° 34′ 37″	3505
	α Arietis	E.	38 21 37	2689	36 44 42	2691	35 7 50	2695	33 31 4	2701
	Jupiter	E.	58 13 0	2611	56 34 20	2602	54 55 28	2594	53 16 25	2585
	Aldebaran	E.	68 39 39	2614	67 1 3	2607	65 22 18	2601	63 43 24	2593
2	α Aquilæ	W.	75 21 24	3374	76 44 10	3352	78 7 21	3333	79 30 54	3315
	Fomalhaut	W.	44 28 19	2895	46 0 44	2864	47 33 49	2834	49 7 33	2806
	Jupiter	E.	44 58 22	2546	43 18 13	2539	41 37 54	2531	39 57 24	2525
	Aldebaran	E.	55 26 39	2564	53 46 54	2559	52 7 3	2554	50 27 5	2550
	Sun	E.	117 53 3	2819	116 19 0	2809	114 44 44	2799	113 10 15	2789
3	α Aquilæ	W.	86 33 26	3243	87 58 44	3233	89 24 14	3224	90 49 55	3216
	Fomalhaut	W.	57 4 27	2693	58 41 16	2675	60 18 30	2656	61 56 9	2640
	Jupiter	E.	31 32 38	2494	29 51 17	2490	28 9 50	2486	26 28 17	2482
	Aldebaran	E.	42 6 5	2539	40 25 46	2540	38 45 29	2542	37 5 14	2546
	Sun	E.	105 14 37	2741	103 38 51	2731	102 2 52	2722	100 26 41	2712
4	α Aquilæ	W.	98 0 9	3196	99 26 23	3196	100 52 35	3199	102 18 45	3202
	Fomalhaut	W.	70 9 45	2566	71 49 27	2553	73 29 27	2540	75 9 44	2529
	α Pegasi	W.	50 32 11	2905	52 4 24	2870	53 37 21	2838	55 11 0	2808
	Aldebaran	E.	28 46 24	2606	27 7 37	2631	25 29 24	2663	23 51 54	2703
	Pollux	E.	71 19 2	2344	69 34 6	2335	67 48 58	2327	66 3 38	2319
	Sun	E.	92 22 36	2666	90 45 10	2657	89 7 32	2647	87 29 41	2639
5	Fomalhaut	W.	83 34 58	2479	85 16 41	2470	86 58 37	2462	88 40 44	2454
	α Pegasi	W.	63 8 4	2688	64 45 0	2669	66 22 22	2651	68 0 8	2634
	Pollux	E.	57 14 2	2279	55 27 32	2272	53 40 52	2265	51 54 1	2258
	Sun	E.	79 17 33	2596	77 38 33	2589	75 59 23	2581	74 20 2	2573
6	Fomalhaut	W.	97 13 42	2426	98 56 40	2422	100 39 44	2419	102 22 52	2416
	α Pegasi	W.	76 14 14	2566	77 53 56	2555	79 33 53	2545	81 14 3	2538
	α Arietis	W.	32 52 52	2390	34 36 41	2369	36 21 0	2351	38 5 45	2335
	Pollux	E.	42 57 17	2326	41 9 28	2320	39 21 31	2315	37 33 26	2310
	Sun	E.	66 0 48	2540	64 20 30	2534	62 40 4	2528	60 59 30	2523
7	α Pegasi	W.	89 37 25	2508	91 18 27	2504	92 59 34	2503	94 40 43	2502
	α Arietis	W.	46 54 41	2276	48 41 16	2267	50 28 4	2260	52 15 3	2253
	Pollux	E.	28 31 20	2191	26 42 39	2188	24 53 54	2187	23 5 7	2186
	Sun	E.	52 35 3	2503	50 53 54	2500	49 12 41	2499	47 31 26	2497
8	α Arietis	W.	61 12 3	2231	62 59 44	2229	64 47 29	2228	66 35 15	2227
	Jupiter	W.	39 27 10	2229	41 14 54	2227	43 2 41	2226	44 50 30	2226
	Sun	E.	39 4 53	2499	37 23 38	2502	35 42 27	2505	34 1 21	2510
9	α Arietis	W.	75 34 7	2232	77 21 47	2235	79 9 22	2239	80 56 52	2243
	Jupiter	W.	53 49 28	2232	55 37 8	2235	57 24 44	2239	59 12 14	2242
	Aldebaran	W.	45 15 21	2267	47 1 40	2264	48 48 3	2263	50 34 27	2263
	Sun	E.	25 38 2	2555	23 58 5	2569	22 18 28	2587	20 39 15	2607
13	Sun	W.	27 37 59	2899	29 10 19	2911	30 42 24	2923	32 14 14	2936
	Spica	E.	33 47 22	2526	32 6 45	2542	30 26 30	2559	28 46 38	2576
	Antares	E.	79 39 6	2517	77 58 17	2533	76 17 50	2549	74 37 45	2565

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
14	Sun	W.	33° 45′ 47″	2950	35° 17′ 3″	2963	36° 48′ 2″	2978	38° 18′ 42″	2993
	Antares	E.	72 58 2	2581	71 18 41	2596	69 39 41	2612	68 1 3	2628
	α Aquilæ	E.	118 30 46	3715	117 14 15	3697	115 57 25	3683	114 40 20	3670
15	Sun	W.	45 47 23	3069	47 16 10	3084	48 44 39	3100	50 12 49	3115
	Antares	E.	59 53 14	2707	58 16 43	2722	56 40 33	2738	55 4 43	2753
	α Aquilæ	E.	108 12 25	3642	106 54 36	3641	105 36 46	3643	104 18 58	3645
16	Sun	W.	57 29 1	3190	58 55 22	3204	60 21 26	3218	61 47 14	3232
	Venus	W.	29 12 26	3272	30 37 10	3287	32 1 37	3301	33 25 47	3315
	Antares	E.	47 10 26	2625	45 36 31	2638	44 2 53	2652	42 29 33	2666
	α Aquilæ	E.	97 50 58	3673	96 33 42	3681	95 16 35	3691	93 59 38	3701
17	Sun	W.	68 52 15	3296	70 16 31	3308	71 40 33	3319	73 4 22	3330
	Venus	W.	40 22 39	3381	41 45 17	3393	43 7 41	3405	44 29 52	3416
	Saturn	W.	24 2 26	2966	25 33 21	2977	27 4 2	2987	28 34 31	2997
	Antares	E.	34 47 1	2927	33 15 16	2939	31 43 46	2949	30 12 29	2959
	α Aquilæ	E.	87 37 47	3761	86 22 4	3775	85 6 36	3790	83 51 23	3804
18	Sun	W.	80 0 31	3378	81 23 13	3386	82 45 45	3393	84 8 9	3401
	Venus	W.	51 17 46	3465	52 38 49	3474	53 59 42	3482	55 20 26	3489
	Saturn	W.	36 3 57	3041	37 33 19	3049	39 2 31	3056	40 31 34	3063
	Spica	W.	23 20 47	3018	24 50 38	3023	26 20 22	3030	27 49 58	3035
	α Aquilæ	E.	77 39 24	3890	76 25 54	3909	75 12 43	3929	73 59 53	3949
19	Sun	W.	90 58 14	3430	92 19 57	3434	93 41 35	3438	95 3 9	3441
	Venus	W.	62 2 15	3519	63 22 18	3523	64 42 17	3527	66 2 11	3530
	Saturn	W.	47 54 59	3090	49 23 21	3093	50 51 39	3096	52 19 53	3100
	Spica	W.	35 16 22	3058	36 45 23	3062	38 14 19	3065	39 43 12	3067
	α Aquilæ	E.	68 1 6	4067	66 50 32	4093	65 40 24	4122	64 30 44	4152
	Fomalhaut	E.	93 17 47	3251	91 52 38	3254	90 27 33	3258	89 2 32	3261
20	Venus	W.	72 41 2	3538	74 0 44	3538	75 20 26	3537	76 40 9	3536
	Saturn	W.	59 40 18	3107	61 8 19	3108	62 36 19	3107	64 4 20	3107
	Spica	W.	47 7 0	3073	48 35 42	3073	50 4 25	3073	51 33 8	3072
	α Aquilæ	E.	58 50 0	4329	57 43 35	4370	56 37 47	4417	55 32 41	4466
	Fomalhaut	E.	81 58 18	3273	80 33 35	3276	79 8 55	3276	77 44 16	3278
	α Pegasi	E.	103 3 27	3409	101 41 21	3406	100 19 11	3402	98 56 57	3399
21	Venus	W.	83 19 10	3525	84 39 7	3520	85 59 9	3515	87 19 16	3511
	Saturn	W.	71 24 50	3096	72 53 5	3091	74 21 25	3087	75 49 50	3083
	Spica	W.	58 57 12	3060	60 26 11	3056	61 55 14	3052	63 24 22	3048
	α Aquilæ	E.	50 18 59	4770	49 18 58	4847	48 20 0	4931	47 22 10	5021
	Fomalhaut	E.	70 41 26	3284	69 16 56	3286	67 52 28	3286	66 28 0	3288
	α Pegasi	E.	92 4 45	3380	90 42 6	3377	89 19 23	3372	87 56 35	3369
22	Venus	W.	94 1 21	3480	95 22 8	3472	96 43 3	3464	98 4 7	3456
	Saturn	W.	83 13 23	3056	84 42 27	3049	86 11 39	3042	87 41 0	3034
	Spica	W.	70 51 33	3020	72 21 21	3013	73 51 18	3006	75 21 23	2998
	Antares	W.	24 57 2	3019	26 26 51	3013	27 56 48	3005	29 26 54	2997
	Fomalhaut	E.	59 26 4	3295	58 1 47	3298	56 37 33	3301	55 13 23	3305
	α Pegasi	E.	81 1 33	3351	79 38 20	3347	78 15 3	3344	76 51 42	3340

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	Sun	W.	39° 49′ 4″	3008	41° 19′ 7″	3023	42° 48′ 51″	3039	44° 18′ 16″	3053
	Antares	E.	66 22 46	2644	64 44 51	2660	63 7 18	2676	61 30 6	2691
	α Aquilæ	E.	113 23 1	3661	112 5 32	3653	110 47 55	3648	109 30 12	3644
15	Sun	W.	51 40 40	3131	53 8 12	3146	54 35 26	3161	56 2 22	3175
	Antares	E.	53 29 13	2768	51 54 3	2782	50 19 12	2797	48 44 40	2811
	α Aquilæ	E.	103 1 12	3649	101 43 30	3653	100 25 53	3659	99 8 22	3665
16	Sun	W.	63 12 45	3946	64 38 0	3959	66 3 0	3971	67 27 45	3984
	Venus	W.	34 49 41	3330	36 13 18	3343	37 36 40	3356	38 59 47	3369
	Antares	E.	40 56 31	2879	39 23 45	2891	37 51 15	2903	36 19 0	2916
	α Aquilæ	E.	92 42 52	3711	91 26 17	3723	90 9 54	3735	88 53 44	3747
17	Sun	W.	74 27 59	3340	75 51 24	3351	77 14 37	3360	78 37 39	3369
	Venus	W.	45 51 50	3427	47 13 36	3438	48 35 10	3447	49 56 33	3456
	Saturn	W.	30 4 47	3006	31 34 52	3017	33 4 44	3025	34 34 26	3034
	Antares	E.	28 41 25	2969	27 10 33	2979	25 39 54	2988	24 9 26	2997
	α Aquilæ	E.	82 36 25	3820	81 21 44	3837	80 7 20	3854	78 53 13	3871
18	Sun	W.	85 30 24	3408	86 52 32	3415	88 14 32	3420	89 36 26	3425
	Venus	W.	56 41 2	3496	58 1 31	3503	59 21 52	3508	60 42 7	3515
	Saturn	W.	42 0 29	3069	43 29 17	3075	44 57 57	3080	46 26 31	3085
	Spica	W.	29 19 27	3040	30 48 50	3046	32 18 6	3050	33 47 17	3055
	α Aquilæ	E.	72 47 23	3970	71 35 14	3993	70 23 28	4017	69 12 5	4041
19	Sun	W.	96 24 39	3444	97 46 6	3446	99 7 31	3447	100 28 54	3449
	Venus	W.	67 22 2	3533	68 41 50	3535	70 1 35	3536	71 21 19	3537
	Saturn	W.	53 48 3	3102	55 16 10	3105	56 44 14	3106	58 12 16	3106
	Spica	W.	41 12 2	3069	42 40 49	3071	44 9 34	3073	45 38 17	3073
	α Aquilæ	E.	63 21 32	4183	62 12 50	4217	61 4 40	4252	59 57 3	4289
	Fomalhaut	E.	87 37 35	3964	86 12 41	3967	84 47 51	3969	83 23 3	3971
20	Venus	W.	77 59 53	3536	79 19 38	3533	80 39 26	3531	81 59 16	3527
	Saturn	W.	65 32 21	3105	67 0 24	3103	68 28 30	3101	69 56 38	3098
	Spica	W.	53 1 52	3070	54 30 38	3069	55 59 26	3066	57 28 17	3063
	α Aquilæ	E.	54 28 19	4518	53 24 43	4573	52 21 55	4633	51 19 59	4699
	Fomalhaut	E.	76 19 39	3980	74 55 4	3981	73 30 30	3982	72 5 57	3983
	α Pegasi	E.	97 34 39	3395	96 12 17	3391	94 49 50	3388	93 27 20	3384
21	Venus	W.	88 39 28	3506	89 59 46	3499	91 20 11	3494	92 40 42	3487
	Saturn	W.	77 18 20	3078	78 46 56	3073	80 15 38	3068	81 44 27	3062
	Spica	W.	64 53 35	3043	66 22 54	3038	67 52 20	3032	69 21 53	3026
	α Aquilæ	E.	46 25 31	5190	45 30 9	5262	44 36 9	5347	43 43 36	5478
	Fomalhaut	E.	65 3 34	3988	63 39 9	3989	62 14 45	3991	60 50 23	3994
	α Pegasi	E.	86 33 43	3365	85 10 47	3361	83 47 46	3358	82 24 42	3354
22	Venus	W.	99 25 20	3447	100 46 43	3438	102 8 16	3430	103 29 59	3420
	Saturn	W.	89 10 30	3030	90 40 10	3019	92 9 59	3010	93 39 59	3001
	Spica	W.	76 51 38	2991	78 22 2	2983	79 52 36	2974	81 23 21	2966
	Antares	W.	30 57 10	2990	32 27 35	2981	33 58 11	2973	35 28 57	2965
	Fomalhaut	E.	53 49 17	3309	52 25 16	3315	51 1 22	3321	49 37 35	3329
	α Pegasi	E.	75 28 17	3336	74 4 49	3334	72 41 17	3332	71 17 43	3330

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Saturn	W.	95° 10′ 10″	2993	96° 40′ 32″	2984	98° 11′ 5″	2974	99° 41′ 50″	2965
	Spica	W.	82 54 16	2958	84 25 22	2948	85 56 40	2939	87 28 10	2929
	Antares	W.	36 59 54	2956	38 31 2	2946	40 2 22	2937	41 33 54	2927
	Fomalhaut	E.	48 13 57	3338	46 50 29	3348	45 27 13	3360	44 4 11	3375
	α Pegasi	E.	69 54 6	3328	68 30 27	3327	67 6 47	3326	65 43 6	3326
24	Spica	W.	95 8 48	2877	96 41 36	2867	98 14 37	2856	99 47 52	2845
	Antares	W.	49 14 42	2876	50 47 32	2866	52 20 35	2855	53 53 52	2843
	α Pegasi	E.	58 44 56	3338	57 21 28	3344	55 58 7	3350	54 34 53	3358
	α Arietis	E.	99 11 48	2926	97 40 2	2914	96 8 1	2903	94 35 46	2891
25	Spica	W.	107 37 43	2789	109 12 25	2777	110 47 23	2766	112 22 35	2754
	Antares	W.	61 43 56	2787	63 18 41	2775	64 53 42	2764	66 28 57	2752
	α Pegasi	E.	47 41 56	3433	46 20 17	3457	44 59 5	3484	43 38 23	3516
	α Arietis	E.	86 50 53	2835	85 17 11	2824	83 43 14	2813	82 9 3	2801
	Jupiter	E.	110 0 2	2828	108 26 10	2815	106 52 2	2804	105 17 39	2792
26	Antares	W.	74 29 5	2695	76 5 52	2683	77 42 55	2672	79 20 13	2660
	α Arietis	E.	74 14 28	2747	72 38 50	2737	71 2 59	2726	69 26 54	2716
	Jupiter	E.	97 21 49	2733	95 45 53	2721	94 9 41	2710	92 33 14	2698
	Aldebaran	E.	104 44 6	2754	103 8 38	2742	101 32 54	2730	99 56 54	2719
27	Antares	W.	87 30 29	2606	89 9 16	2595	90 48 18	2585	92 27 34	2574
	α Aquilæ	W.	47 31 6	4467	48 35 27	4363	49 41 22	4266	50 48 46	4176
	α Arietis	E.	61 23 12	2669	59 45 51	2660	58 8 18	2653	56 30 35	2645
	Jupiter	E.	84 27 9	2643	82 49 12	2632	81 11 0	2621	79 32 34	2611
	Aldebaran	E.	91 53 5	2663	90 15 35	2652	88 37 50	2641	86 59 51	2632
28	Antares	W.	100 47 24	2525	102 28 2	2516	104 8 53	2507	105 49 57	2498
	α Aquilæ	W.	56 45 18	3820	57 59 59	3764	59 15 39	3711	60 32 14	3663
	α Arietis	E.	48 19 35	2615	46 41 0	2610	45 2 19	2607	43 23 34	2604
	Jupiter	E.	71 16 58	2562	69 37 11	2553	67 57 12	2544	66 17 0	2536
	Aldebaran	E.	78 46 38	2585	77 7 22	2577	75 27 55	2568	73 48 16	2561
29	α Aquilæ	W.	67 7 5	3467	68 28 6	3436	69 49 42	3407	71 11 51	3379
	Fomalhaut	W.	35 32 29	3085	37 0 57	3030	38 30 32	2981	40 1 9	2936
	Jupiter	E.	57 53 10	2497	56 11 52	2489	54 30 24	2482	52 48 46	2476
	Aldebaran	E.	65 27 32	2527	63 46 56	2521	62 6 12	2516	60 25 21	2512
	Pollux	E.	108 59 5	2458	107 16 53	2450	105 34 30	2443	103 51 56	2436
30	α Aquilæ	W.	78 9 34	3275	79 34 15	3259	80 59 14	3245	82 24 30	3233
	Fomalhaut	W.	47 46 40	2770	49 21 47	2746	50 57 26	2723	52 33 35	2702
	Jupiter	E.	44 18 30	2449	42 36 5	2444	40 53 33	2441	39 10 56	2438
	Aldebaran	E.	51 59 45	2497	50 18 27	2495	48 37 7	2495	46 55 47	2495
	Pollux	E.	95 16 39	2403	93 33 8	2396	91 49 28	2391	90 5 40	2384
31	α Aquilæ	W.	89 33 55	3193	91 0 13	3188	92 26 36	3187	93 53 1	3186
	Fomalhaut	W.	60 40 38	2621	62 19 5	2607	63 57 50	2596	65 36 51	2584
	α Pegasi	W.	41 47 39	3138	43 15 3	3084	44 43 32	3036	46 13 0	2993
	Aldebaran	E.	38 29 46	2515	36 48 54	2525	35 8 15	2536	33 27 52	2549
	Pollux	E.	81 24 41	2359	79 40 8	2355	77 55 28	2350	76 10 42	2346
	Sun	E.	127 58 6	2684	126 21 4	2678	124 43 55	2672	123 6 38	2668

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff.
23	Saturn	W.	101° 12′ 47″	2954	102° 43′ 57″	2945	104° 15′ 19″	2935	105° 46′ 54″	2924
	Spica	W.	88 59 52	2919	90 31 47	2909	92 3 54	2899	93 36 14	2888
	Antares	W.	43 5 38	2917	44 37 35	2906	46 9 44	2896	47 42 6	2887
	Fomalhaut	E.	42 41 26	3393	41 19 1	3412	39 56 58	3436	38 35 22	3462
	α Pegasi	E.	64 19 25	3326	62 55 44	3328	61 32 5	3330	60 8 28	3334
24	Spica	W.	101 21 21	2834	102 55 5	2823	104 29 3	2811	106 3 16	2801
	Antares	W.	55 27 24	2832	57 1 10	2821	58 35 10	2809	60 9 26	2798
	α Pegasi	E.	53 11 49	3369	51 48 57	3381	50 26 19	3396	49 3 58	3413
	α Arietis	E.	93 3 16	2880	91 30 32	2869	89 57 34	2858	88 24 21	2846
25	Spica	W.	113 58 3	2743	115 33 46	2732	117 9 44	2720	118 45 57	2708
	Antares	W.	68 4 28	2741	69 40 14	2729	71 16 16	2717	72 52 33	2706
	α Pegasi	E.	42 18 17	3554	40 58 52	3596	39 40 13	3646	38 22 28	3701
	α Arietis	E.	80 34 37	2790	78 59 56	2779	77 25 1	2769	75 49 52	2757
	Jupiter	E.	103 43 0	2780	102 8 6	2768	100 32 56	2756	98 57 30	2744
26	Antares	W.	80 57 46	2649	82 35 35	2638	84 13 38	2627	85 51 56	2616
	α Arietis	E.	67 50 35	2706	66 14 3	2697	64 37 19	2687	63 0 22	2678
	Jupiter	E.	90 56 31	2687	89 19 33	2675	87 42 20	2664	86 4 52	2653
	Aldebaran	E.	98 20 39	2707	96 44 8	2695	95 7 22	2684	93 30 21	2673
27	Antares	W.	94 7 5	2564	95 46 49	2554	97 26 47	2544	99 6 59	2535
	α Aquilæ	W.	51 57 35	4093	53 7 43	4017	54 19 6	3946	55 31 39	3881
	α Arietis	E.	54 52 41	2638	53 14 37	2632	51 36 25	2625	49 58 4	2619
	Jupiter	E.	77 53 54	2601	76 15 0	2591	74 35 53	2581	72 56 32	2572
	Aldebaran	E.	85 21 39	2621	83 43 13	2612	82 4 34	2602	80 25 42	2593
28	Antares	W.	107 31 13	2489	109 12 41	2481	110 54 21	2473	112 36 12	2465
	α Aquilæ	W.	61 49 41	3617	63 7 57	3576	64 26 58	3536	65 46 42	3501
	α Arietis	E.	41 44 45	2604	40 5 55	2603	38 27 4	2604	36 48 15	2606
	Jupiter	E.	64 36 37	2527	62 56 2	2519	61 15 15	2512	59 34 18	2504
	Aldebaran	E.	72 8 27	2553	70 28 27	2546	68 48 18	2539	67 7 59	2533
29	α Aquilæ	W.	72 34 31	3355	73 57 39	3332	75 21 14	3311	76 45 13	3292
	Fomalhaut	W.	41 32 42	2896	43 5 6	2860	44 38 16	2827	46 12 9	2798
	Jupiter	E.	51 6 59	2470	49 25 4	2464	47 43 0	2459	46 0 49	2453
	Aldebaran	E.	58 44 24	2507	57 3 21	2504	55 22 13	2501	53 41 1	2498
	Pollux	E.	102 9 12	2429	100 26 18	2422	98 43 14	2415	97 0 1	2409
30	α Aquilæ	W.	83 50 0	3222	85 15 43	3212	86 41 38	3204	88 7 43	3198
	Fomalhaut	W.	54 10 12	2683	55 47 15	2666	57 24 41	2649	59 2 29	2634
	Jupiter	E.	37 28 15	2435	35 45 30	2432	34 2 41	2431	32 19 50	2429
	Aldebaran	E.	45 14 27	2497	43 33 10	2499	41 51 56	2503	40 10 47	2509
	Pollux	E.	88 21 43	2380	86 37 39	2374	84 53 27	2369	83 9 8	2364
31	α Aquilæ	W.	95 19 27	3187	96 45 52	3189	98 12 14	3193	99 38 32	3198
	Fomalhaut	W.	67 16 8	2574	68 55 39	2565	70 35 22	2556	72 15 17	2548
	α Pegasi	W.	47 43 22	2954	49 14 33	2918	50 46 29	2886	52 19 6	2856
	Aldebaran	E.	31 47 47	2566	30 8 6	2588	28 28 55	2614	26 50 19	2646
	Pollux	E.	74 25 50	2342	72 40 52	2338	70 55 48	2335	69 10 39	2331
	Sun	E.	121 29 15	2663	119 51 45	2658	118 14 9	2654	116 36 27	2649

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	10 43 15.18	9.064	N. 8 6 56.2	–54.59	15 53.76	64.40	0 14.29	0.791
Sat.	2	10 46 52.57	9.053	7 45 2.0	54.92	15 53.99	64.36	0 33.39	0.801
SUN.	3	10 50 29.71	9.043	7 23 0.1	55.23	15 54.22	64.32	0 52.76	0.812
Mon.	4	10 54 6.61	9.033	7 0 50.8	–55.54	15 54.45	64.29	1 12.35	0.821
Tues.	5	10 57 43.29	9.024	6 38 34.6	55.81	15 54.68	64.25	1 32.17	0.830
Wed.	6	11 1 19.77	9.016	6 16 11.7	56.09	15 54.92	64.22	1 52.19	0.838
Thur.	7	11 4 56.06	9.009	5 53 42.4	–56.34	15 55.16	64.19	2 12.40	0.846
Frid.	8	11 8 32.18	9.002	5 31 7.2	56.59	15 55.40	64.17	2 32.78	0.852
Sat.	9	11 12 8.15	8.996	5 8 26.2	56.82	15 55.65	64.14	2 53.31	0.858
SUN.	10	11 15 43.97	8.990	4 45 40.0	–57.03	15 55.90	64.12	3 13.98	0.864
Mon.	11	11 19 19.67	8.985	4 22 48.8	57.23	15 56.15	64.11	3 34.78	0.869
Tues.	12	11 22 55.26	8.981	3 59 53.0	57.41	15 56.41	64.09	3 55.68	0.873
Wed.	13	11 26 30.76	8.978	3 36 53.0	–57.58	15 56.67	64.08	4 16.69	0.876
Thur.	14	11 30 6.19	8.975	3 13 49.2	57.73	15 56.93	64.07	4 37.75	0.879
Frid.	15	11 33 41.56	8.973	2 50 41.8	57.87	15 57.20	64.07	4 58.88	0.881
Sat.	16	11 37 16.87	8.971	2 27 31.3	–58.00	15 57.46	64.06	5 20.06	0.883
SUN.	17	11 40 52.18	8.971	2 4 18.0	58.11	15 57.73	64.07	5 41.25	0.883
Mon.	18	11 44 27.48	8.971	1 41 2.2	58.20	15 58.00	64.07	6 2.44	0.883
Tues.	19	11 48 2.79	8.972	1 17 44.3	–58.28	15 58.28	64.08	6 23.63	0.882
Wed.	20	11 51 38.15	8.974	0 54 24.6	58.35	15 58.55	64.09	6 44.76	0.880
Thur.	21	11 55 13.56	8.976	0 31 3.4	58.40	15 58.82	64.10	7 5.84	0.877
Frid.	22	11 58 49.05	8.981	N. 0 7 41.2	–58.44	15 59.10	64.12	7 26.85	0.873
Sat.	23	12 2 24.65	8.986	S. 0 15 41.9	58.47	15 59.37	64.13	7 47.75	0.868
SUN.	24	12 6 0.38	8.992	0 39 5.5	58.49	15 59.65	64.16	8 8.52	0.862
Mon.	25	12 9 36.27	8.999	1 2 29.2	–58.49	15 59.92	64.18	8 29.13	0.855
Tues.	26	12 13 12.31	9.007	1 25 52.8	58.48	16 0.19	64.21	8 49.58	0.848
Wed.	27	12 16 48.57	9.016	1 49 16.0	58.45	16 0.47	64.24	9 9.82	0.839
Thur.	28	12 20 25.06	9.025	2 12 38.4	–58.41	16 0.74	64.27	9 29.83	0.829
Frid.	29	12 24 1.79	9.036	2 35 59.7	58.36	16 1.01	64.31	9 49.60	0.818
Sat.	30	12 27 38.80	9.048	2 59 19.6	58.29	16 1.28	64.35	10 9.09	0.806
SUN.	31	12 31 16.09	9.061	S. 3 22 37.8	–58.21	16 1.55	64.39	10 28.30	0.794

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^{s}.18$ from the sidereal time.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	10 43 15.21	9.066	N. 8 6 56.0	-54.61	0 14.29	0.791	10 43 29.50
Sat.	2	10 46 52.65	9.055	7 45 1.4	54.93	0 33.40	0.802	10 47 26.05
SUN.	3	10 50 29.84	9.045	7 22 59.2	55.24	0 52.77	0.812	10 51 22.61
Mon.	4	10 54 6.79	9.035	7 0 49.7	-55.54	1 12.37	0.821	10 55 19.16
Tues.	5	10 57 43.52	9.026	6 38 33.1	55.83	1 32.19	0.830	10 59 15.71
Wed.	6	11 1 20.05	9.018	6 16 9.9	56.10	1 52.22	0.838	11 3 12.27
Thur.	7	11 4 56.39	9.011	5 53 40.3	-56.36	2 12.43	0.846	11 7 8.82
Frid.	8	11 8 32.56	9.004	5 31 4.7	56.60	2 32.82	0.852	11 11 5.38
Sat.	9	11 12 8.58	8.998	5 8 23.4	56.83	2 53.35	0.859	11 15 1.93
SUN.	10	11 15 44.45	8.992	4 45 36.9	-57.04	3 14.03	0.864	11 18 58.48
Mon.	11	11 19 20.21	8.987	4 22 45.3	57.24	3 34.83	0.869	11 22 55.04
Tues.	12	11 22 55.85	8.983	3 59 49.2	57.42	3 55.74	0.873	11 26 51.59
Wed.	13	11 26 31.40	8.980	3 36 48.9	-57.59	4 16.75	0.877	11 30 48.15
Thur.	14	11 30 6.88	8.977	3 13 44.7	57.75	4 37.82	0.879	11 34 44.70
Frid.	15	11 33 42.30	8.975	2 50 37.0	57.89	4 58.95	0.882	11 38 41.25
Sat.	16	11 37 17.67	8.974	2 27 26.1	-58.01	5 20.14	0.883	11 42 37.81
SUN.	17	11 40 53.03	8.973	2 4 12.4	58.12	5 41.33	0.883	11 46 34.36
Mon.	18	11 44 28.38	8.973	1 40 56.3	58.22	6 2.53	0.883	11 50 30.91
Tues.	19	11 48 3.75	8.975	1 17 38.0	-58.30	6 23.72	0.882	11 54 27.47
Wed.	20	11 51 39.16	8.977	0 54 18.0	58.36	6 44.87	0.880	11 58 24.02
Thur.	21	11 55 14.62	8.979	0 30 56.5	58.42	7 5.96	0.877	12 2 20.58
Frid.	22	11 58 50.17	8.983	N. 0 7 33.9	-58.46	7 26.96	0.873	12 6 17.13
Sat.	23	12 2 25.82	8.988	S. 0 15 49.5	58.49	7 47.86	0.868	12 10 13.68
SUN.	24	12 6 1.60	8.994	0 39 13.5	58.50	8 8.64	0.862	12 14 10.24
Mon.	25	12 9 37.54	9.001	1 2 37.5	-58.50	8 29.25	0.855	12 18 6.79
Tues.	26	12 13 13.64	9.009	1 26 1.4	58.49	8 49.70	0.848	12 22 3.34
Wed.	27	12 16 49.95	9.018	1 49 24.9	58.46	9 9.95	0.839	12 25 59.90
Thur	28	12 20 26.49	9.028	2 12 47.7	-58.42	9 29.96	0.829	12 29 56.45
Frid.	29	12 24 3.27	9.038	2 36 9.3	58.37	9 49.73	0.818	12 33 53.00
Sat.	30	12 27 40.33	9.050	2 59 29.5	58.30	10 9.23	0.807	12 37 49.56
SUN.	31	12 31 17.67	9.063	S. 3 22 47.9	-58.22	10 28.44	0.794	12 41 46.11

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign – prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

Diff. for 1 Hour,
+ 9^s.8565.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S						Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	244	159 13 58.7	13 30.5	145.28	+ 0.28	0.0037352	−42.9	13 14 20.01
2	245	160 12 6.3	11 38.0	145.36	0.39	0.0036319	43.2	13 10 24.11
3	246	161 10 15.9	9 47.5	145.44	0.48	0.0035277	43.6	13 6 28.19
4	247	162 8 27.6	7 59.1	145.53	+ 0.54	0.0034224	−44.1	13 2 32.29
5	248	163 6 41.3	6 12.6	145.61	0.57	0.0033159	44.6	12 58 36.39
6	249	164 4 57.0	4 28.2	145.70	0.58	0.0032081	45.2	12 54 40.47
7	250	165 3 14.7	2 45.8	145.78	+ 0.56	0.0030989	−45.8	12 50 44.57
8	251	166 1 34.3	1 5.3	145.86	0.51	0.0029883	46.4	12 46 48.65
9	252	166 59 55.9	59 26.8	145.94	0.43	0.0028762	47.0	12 42 52.75
10	253	167 58 19.5	57 50.3	146.02	+ 0.32	0.0027626	−47.6	12 38 56.84
11	254	168 56 45.0	56 15.6	146.10	0.20	0.0026475	48.2	12 35 0.93
12	255	169 55 12.2	54 42.7	146.17	+ 0.06	0.0025311	48.8	12 31 5.03
13	256	170 53 41.2	53 11.6	146.24	− 0.07	0.0024133	−49.4	12 27 9.11
14	257	171 52 11.9	51 42.2	146.32	0.20	0.0022942	49.9	12 23 13.21
15	258	172 50 44.4	50 14.6	146.39	0.32	0.0021740	50.3	12 19 17.30
16	259	173 49 18.6	48 48.7	146.46	− 0.42	0.0020528	−50.8	12 15 21.39
17	260	174 47 54.5	47 24.5	146.53	0.51	0.0019306	51.1	12 11 25.49
18	261	175 46 32.0	46 1.8	146.60	0.58	0.0018076	51.4	12 7 29.58
19	262	176 45 11.2	44 40.9	146.67	− 0.61	0.0016840	−51.6	12 3 33.67
20	263	177 43 52.0	43 21.6	146.74	0.60	0.0015601	51.7	11 59 37.76
21	264	178 42 34.5	42 4.0	146.81	0.57	0.0014360	51.7	11 55 41.85
22	265	179 41 18.8	40 48.2	146.89	− 0.51	0.0013118	−51.8	11 51 45.95
23	266	180 40 5.0	39 34.3	146.96	0.43	0.0011876	51.7	11 47 50.04
24	267	181 38 53.0	38 22.2	147.04	0.32	0.0010636	51.6	11 43 54.13
25	268	182 37 42.9	37 12.0	147.12	− 0.20	0.0009398	−51.5	11 39 58.22
26	269	183 36 34.8	36 3.8	147.20	− 0.07	0.0008163	51.4	11 36 2.30
27	270	184 35 28.7	34 57.6	147.29	+ 0.06	0.0006931	51.3	11 32 6.40
28	271	185 34 24.8	33 53.6	147.38	+ 0.19	0.0005701	− 51.2	11 28 10.50
29	272	186 33 23.1	32 51.7	147.48	0.30	0.0004473	51.1	11 24 14.60
30	273	187 32 23.7	31 52.2	147.57	0.39	0.0003247	51.0	11 20 18.68
31	274	188 31 26.5	30 54.9	147.67	+ 0.46	0.0002023	− 51.0	11 16 22.78

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0ᵈ.0.

Diff. for 1 Hour,
— 9ˢ.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 5.9	16 7.6	58 58.3	+0.57	59 4.6	+0.48	16 37.1	2.31	20.6
2	16 9.0	16 10.1	59 9.8	0.38	59 13.8	0.29	17 34.6	2.48	21.6
3	16 10.9	16 11.3	59 16.7	+0.19	59 18.3	+0.08	18 36.0	2.61	22.6
4	16 11.4	16 11.2	59 18.7	−0.02	59 17.8	−0.13	19 39.1	2.62	23.6
5	16 10.6	16 9.5	59 15.5	0.26	59 11.6	0.39	20 41.3	2.53	24.6
6	16 8.0	16 6.1	59 6.1	0.53	58 59.0	0.66	21 39.9	2.35	25.6
7	16 3.7	16 0.8	58 50.2	−0.81	58 39.6	−0.95	22 34.2	2.17	26.6
8	15 57.4	15 53.7	58 27.3	1.09	58 13.4	1.22	23 24.0	2.00	27.6
9	15 49.5	15 44.9	57 58.0	1.34	57 41.3	1.43	δ		28.6
10	15 40.1	15 35.1	57 23.6	−1.51	57 5.1	−1.56	0 10.5	1.88	0.2
11	15 29.9	15 24.7	56 46.1	1.59	56 26.9	1.59	0 54.6	1.80	1.2
12	15 19.5	15 14.5	56 7.9	1.56	55 49.5	1.50	1 37.6	1.78	2.2
13	15 9.7	15 5.2	55 31.9	−1.42	55 15.5	−1.31	2 20.6	1.80	3.2
14	15 1.1	14 57.5	55 0.5	1.18	54 47.3	1.02	3 4.6	1.86	4.2
15	14 54.5	14 52.0	54 36.0	0.85	54 26.9	0.66	3 50.2	1.95	5.2
16	14 50.1	14 48.9	54 20.1	−0.47	54 15.7	−0.26	4 38.0	2.04	6.2
17	14 48.5	14 48.7	54 13.9	−0.04	54 14.7	+0.18	5 27.9	2.12	7.2
18	14 49.6	14 51.3	54 18.1	+0.40	54 24.2	0.61	6 19.2	2.16	8.2
19	14 53.6	14 56.6	54 32.7	+0.81	54 43.7	+1.01	7 11.4	2.17	9.2
20	15 0.2	15 4.4	54 57.0	1.20	55 12.5	1.37	8 2.9	2.12	10.2
21	15 9.1	15 14.3	55 29.8	1.51	55 48.7	1.64	8 53.2	2.05	11.2
22	15 19.8	15 25.5	56 9.1	+1.73	56 30.1	+1.78	9 41.5	1.98	12.2
23	15 31.4	15 37.4	56 51.8	1.82	57 13.7	1.81	10 28.4	1.93	13.2
24	15 43.3	15 49.0	57 35.3	1.77	57 56.1	1.69	11 14.5	1.91	14.2
25	15 54.3	15 59.3	58 15.9	+1.58	58 34.1	+1.44	12 0.6	1.94	15.2
26	16 3.8	16 7.6	58 50.5	1.28	59 4.7	1.09	12 47.9	2.02	16.2
27	16 10.9	16 13.4	59 16.6	0.89	59 26.0	0.68	13 37.8	2.14	17.2
28	16 15.3	16 16.5	59 32.9	+0.47	59 37.2	+0.26	14 31.2	2.31	18.2
29	16 17.0	16 16.9	59 39.1	+0.07	59 38.8	−0.12	15 28.7	2.48	19.2
30	16 16.2	16 15.1	59 36.3	−0.28	59 32.0	0.43	16 29.9	2.60	20.2
31	16 13.5	16 11.5	59 26.1	−0.55	59 18.8	−0.66	17 32.9	2.63	21.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 1.					**SUNDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 44 26.65	2.2803	N.18 7 38.9	13.269	0	4 41 29.15	2.5882	N.26 21 24.7	6.688
1	2 46 43.66	2.2867	18 20 51.7	13.164	1	4 44 4.60	2.5934	26 28 0.8	6.514
2	2 49 1.06	2.2931	18 33 58.6	13.064	2	4 46 40.36	2.5986	26 34 26.4	6.338
3	2 51 18.84	2.2996	18 46 59.4	12.962	3	4 49 16.43	2.6036	26 40 41.4	6.162
4	2 53 37.01	2.3062	18 59 54.1	12.860	4	4 51 52.79	2.6084	26 46 45.8	5.984
5	2 55 55.58	2.3127	19 12 42.6	12.756	5	4 54 29.44	2.6132	26 52 39.5	5.805
6	2 58 14.54	2.3192	19 25 24.8	12.649	6	4 57 6.38	2.6179	26 58 22.4	5.624
7	3 0 33.89	2.3258	19 38 0.5	12.541	7	4 59 43.59	2.6224	27 3 54.4	5.443
8	3 2 53.64	2.3325	19 50 29.7	12.432	8	5 2 21.07	2.6267	27 9 15.5	5.261
9	3 5 13.79	2.3392	20 2 52.3	12.320	9	5 4 58.80	2.6310	27 14 25.7	5.077
10	3 7 34.34	2.3458	20 15 8.1	12.207	10	5 7 36.79	2.6352	27 19 24.8	4.893
11	3 9 55.29	2.3525	20 27 17.1	12.093	11	5 10 15.03	2.6392	27 24 12.8	4.707
12	3 12 16.64	2.3592	20 39 19.2	11.976	12	5 12 53.50	2.6431	27 28 49.6	4.520
13	3 14 38.40	2.3660	20 51 14.2	11.857	13	5 15 32.20	2.6468	27 33 15.2	4.333
14	3 17 0.56	2.3727	21 3 2.0	11.737	14	5 18 11.12	2.6504	27 37 29.5	4.145
15	3 19 23.12	2.3794	21 14 42.6	11.615	15	5 20 50.25	2.6538	27 41 32.6	3.957
16	3 21 46.09	2.3862	21 26 15.8	11.492	16	5 23 29.58	2.6571	27 45 24.3	3.766
17	3 24 9.47	2.3930	21 37 41.6	11.367	17	5 26 9.10	2.6602	27 49 4.5	3.575
18	3 26 33.25	2.3998	21 48 59.9	11.241	18	5 28 48.81	2.6632	27 52 33.3	3.384
19	3 28 57.44	2.4066	22 0 10.5	11.112	19	5 31 28.69	2.6660	27 55 50.6	3.192
20	3 31 22.04	2.4133	22 11 13.3	10.981	20	5 34 8.73	2.6687	27 58 56.3	2.999
21	3 33 47.04	2.4201	22 22 8.2	10.849	21	5 36 48.93	2.6712	28 1 50.5	2.806
22	3 36 12.45	2.4268	22 32 55.2	10.716	22	5 39 29.27	2.6735	28 4 33.0	2.612
23	3 38 38.26	2.4336	N.22 43 34.1	10.581	23	5 42 9.75	2.6757	N.28 7 3.9	2.417
	SATURDAY 2.					**. MONDAY 4.**			
0	3 41 4.47	2.4402	N.22 54 4.9	10.444	0	5 44 50.36	2.6777	N.28 9 23.1	2.222
1	3 43 31.09	2.4470	23 4 27.4	10.305	1	5 47 31.08	2.6795	28 11 30.6	2.027
2	3 45 58.11	2.4537	23 14 41.5	10.165	2	5 50 11.90	2.6812	28 13 26.3	1.831
3	3 48 25.53	2.4603	23 24 47.2	10.023	3	5 52 52.82	2.6827	28 15 10.3	1.635
4	3 50 53.35	2.4670	23 34 44.3	9.880	4	5 55 33.82	2.6840	28 16 42.5	1.438
5	3 53 21.57	2.4736	23 44 32.8	9.735	5	5 58 14.90	2.6852	28 18 2.9	1.241
6	3 55 50.18	2.4801	23 54 12.5	9.588	6	6 0 56.04	2.6861	28 19 11.4	1.044
7	3 58 19.18	2.4866	24 3 43.3	9.439	7	6 3 37.23	2.6869	28 20 8.1	0.847
8	4 0 48.57	2.4931	24 13 5.2	9.290	8	6 6 18.47	2.6875	28 20 53.0	0.649
9	4 3 18.36	2.4996	24 22 18.1	9.139	9	6 8 59.73	2.6879	28 21 26.0	0.451
10	4 5 48.53	2.5059	24 31 21.9	8.986	10	6 11 41.01	2.6882	28 21 47.1	0.253
11	4 8 19.07	2.5122	24 40 16.4	8.831	11	6 14 22.31	2.6883	28 21 56.4	+ 0.056
12	4 10 49.99	2.5185	24 49 1.6	8.675	12	6 17 3.61	2.6882	28 21 53.8	− 0.142
13	4 13 21.29	2.5247	24 57 37.4	8.517	13	6 19 44.90	2.6879	28 21 39.3	0.340
14	4 15 52.96	2.5309	25 6 3.7	8.358	14	6 22 26.16	2.6874	28 21 13.0	0.538
15	4 18 25.00	2.5370	25 14 20.4	8.197	15	6 25 7.39	2.6867	28 20 34.8	0.736
16	4 20 57.40	2.5430	25 22 27.4	8.035	16	6 27 48.57	2.6859	28 19 44.7	0.933
17	4 23 30.16	2.5490	25 30 24.6	7.872	17	6 30 29.70	2.6850	28 18 42.8	1.130
18	4 26 3.28	2.5549	25 38 12.0	7.707	18	6 33 10.77	2.6838	28 17 29.1	1.327
19	4 28 36.75	2.5607	25 45 49.5	7.541	19	6 35 51.76	2.6824	28 16 3.6	1.523
20	4 31 10.56	2.5663	25 53 16.9	7.372	20	6 38 32.66	2.6809	28 14 26.3	1.720
21	4 33 44.71	2.5719	26 0 34.2	7.203	21	6 41 13.47	2.6792	28 12 37.2	1.916
22	4 36 19.19	2.5775	26 7 41.3	7.033	22	6 43 54.17	2.6773	28 10 36.4	2.111
23	4 38 54.01	2.5830	26 14 38.2	6.862	23	6 46 34.75	2.6752	28 8 23.9	2.306
24	4 41 29.15	2.5882	N.26 21 24.7	6.688	24	6 49 15.20	2.6730	N.28 5 59.7	2.501

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	6 49 15.20	2.6730	N.28 5 59.7	2.501
1	6 51 55.51	2.6707	28 3 23.8	2.695
2	6 54 35.68	2.6682	28 0 36.3	2.888
3	6 57 15.69	2.6654	27 57 37.3	3.080
4	6 59 55.53	2.6625	27 54 26.7	3.272
5	7 2 35.19	2.6595	27 51 4.6	3.464
6	7 5 14.67	2.6563	27 47 31.0	3.655
7	7 7 53.95	2.6529	27 43 46.0	3.845
8	7 10 33.02	2.6493	27 39 49.6	4.033
9	7 13 11.87	2.6457	27 35 42.0	4.221
10	7 15 50.50	2.6419	27 31 23.1	4.408
11	7 18 28.90	2.6379	27 26 53.0	4.595
12	7 21 7.05	2.6337	27 22 11.7	4.781
13	7 23 44.95	2.6295	27 17 19.3	4.965
14	7 26 22.59	2.6252	27 12 15.9	5.148
15	7 28 59.97	2.6207	27 7 1.6	5.330
16	7 31 37.07	2.6159	27 1 36.3	5.512
17	7 34 13.88	2.6111	26 56 0.2	5.691
18	7 36 50.40	2.6062	26 50 13.4	5.869
19	7 39 26.62	2.6012	26 44 15.9	6.047
20	7 42 2.54	2.5960	26 38 7.7	6.224
21	7 44 38.14	2.5907	26 31 49.0	6.399
22	7 47 13.42	2.5853	26 25 19.8	6.572
23	7 49 48.38	2.5798	N.26 18 40.3	6.744

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	7 52 23.00	2.5742	N.26 11 50.5	6.916
1	7 54 57.28	2.5685	26 4 50.4	7.086
2	7 57 31.22	2.5627	25 57 40.2	7.254
3	8 0 4.80	2.5567	25 50 19.9	7.422
4	8 2 38.02	2.5507	25 42 49.6	7.587
5	8 5 10.88	2.5446	25 35 9.5	7.750
6	8 7 43.37	2.5384	25 27 19.6	7.912
7	8 10 15.48	2.5321	25 19 20.0	8.073
8	8 12 47.22	2.5258	25 11 10.8	8.233
9	8 15 18.58	2.5194	25 2 52.0	8.392
10	8 17 49.55	2.5129	24 54 23.8	8.548
11	8 20 20.12	2.5063	24 45 46.3	8.703
12	8 22 50.30	2.4997	24 36 59.5	8.856
13	8 25 20.08	2.4930	24 28 3.6	9.007
14	8 27 49.46	2.4862	24 18 58.6	9.157
15	8 30 18.42	2.4793	24 9 44.7	9.305
16	8 32 46.97	2.4725	24 0 22.0	9.452
17	8 35 15.12	2.4657	23 50 50.5	9.597
18	8 37 42.86	2.4588	23 41 10.3	9.741
19	8 40 10.18	2.4518	23 31 21.6	9.882
20	8 42 37.07	2.4447	23 21 24.5	10.022
21	8 45 3.54	2.4377	23 11 19.0	10.160
22	8 47 29.59	2.4306	23 1 5.3	10.296
23	8 49 55.21	2.4234	22 50 43.5	10.431
24	8 52 20.40	2.4162	N.22 40 13.6	10.564

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 52 20.40	2.4162	N.22 40 13.6	10.564
1	8 54 45.16	2.4091	22 29 35.8	10.695
2	8 57 9.49	2.4020	22 18 50.2	10.824
3	8 59 33.40	2.3949	22 7 56.9	10.952
4	9 1 56.88	2.3877	21 56 56.0	11.078
5	9 4 19.92	2.3804	21 45 47.6	11.202
6	9 6 42.53	2.3732	21 34 31.8	11.324
7	9 9 4.71	2.3660	21 23 8.7	11.444
8	9 11 26.45	2.3588	21 11 38.5	11.563
9	9 13 47.76	2.3516	21 0 1.2	11.680
10	9 16 8.64	2.3443	20 48 16.9	11.795
11	9 18 29.08	2.3371	20 36 25.8	11.908
12	9 20 49.09	2.3299	20 24 27.9	12.020
13	9 23 8.67	2.3227	20 12 23.4	12.130
14	9 25 27.82	2.3156	20 0 12.3	12.238
15	9 27 46.54	2.3085	19 47 54.9	12.343
16	9 30 4.84	2.3014	19 35 31.2	12.448
17	9 32 22.71	2.2943	19 23 1.2	12.551
18	9 34 40.15	2.2872	19 10 25.1	12.652
19	9 36 57.17	2.2802	18 57 43.0	12.750
20	9 39 13.77	2.2732	18 44 55.1	12.847
21	9 41 29.95	2.2662	18 32 1.4	12.942
22	9 43 45.71	2.2592	18 19 2.0	13.036
23	9 46 1.05	2.2522	N.18 5 57.1	13.127

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 48 15.98	2.2454	N.17 52 46.7	13.217
1	9 50 30.50	2.2386	17 39 31.0	13.306
2	9 52 44.61	2.2318	17 26 10.0	13.392
3	9 54 58.32	2.2251	17 12 43.9	13.477
4	9 57 11.62	2.2184	16 59 12.8	13.560
5	9 59 24.52	2.2117	16 45 36.7	13.642
6	10 1 37.02	2.2051	16 31 55.8	13.721
7	10 3 49.13	2.1985	16 18 10.2	13.798
8	10 6 0.84	2.1920	16 4 20.0	13.875
9	10 8 12.17	2.1856	15 50 25.2	13.950
10	10 10 23.11	2.1792	15 36 26.0	14.022
11	10 12 33.67	2.1728	15 22 22.6	14.092
12	10 14 43.84	2.1664	15 8 15.0	14.161
13	10 16 53.64	2.1602	14 54 3.3	14.229
14	10 19 3.07	2.1541	14 39 47.5	14.296
15	10 21 12.13	2.1479	14 25 27.8	14.360
16	10 23 20.82	2.1419	14 11 4.3	14.422
17	10 25 29.16	2.1360	13 56 37.2	14.482
18	10 27 37.14	2.1300	13 42 6.5	14.541
19	10 29 44.76	2.1242	13 27 32.3	14.598
20	10 31 52.04	2.1184	13 12 54.7	14.655
21	10 33 58.97	2.1127	12 58 13.7	14.710
22	10 36 5.56	2.1070	12 43 29.5	14.762
23	10 38 11.81	2.1013	12 28 42.2	14.813
24	10 40 17.72	2.0957	N.12 13 51.9	14.863

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 40 17.72	2.0957	N.12 13 51.9	14.863
1	10 42 23.30	2.0903	11 58 58.7	14.911
2	10 44 28.56	2.0850	11 44 2.6	14.957
3	10 46 33.50	2.0797	11 29 3.8	15.002
4	10 48 38.12	2.0744	11 14 2.4	15.045
5	10 50 42.43	2.0692	10 58 58.4	15.087
6	10 52 46.43	2.0642	10 43 52.0	15.127
7	10 54 50.13	2.0592	10 28 43.2	15.166
8	10 56 53.53	2.0542	10 13 32.1	15.203
9	10 58 56.63	2.0493	9 58 18.9	15.238
10	11 0 59.44	2.0445	9 43 3.6	15.272
11	11 3 1.97	2.0398	9 27 46.3	15.305
12	11 5 4.21	2.0351	9 12 27.0	15.337
13	11 7 6.18	2.0306	8 57 5.9	15.366
14	11 9 7.88	2.0260	8 41 43.1	15.393
15	11 11 9.30	2.0215	8 26 18.7	15.420
16	11 13 10.46	2.0172	8 10 52.7	15.447
17	11 15 11.37	2.0130	7 55 25.1	15.471
18	11 17 12.02	2.0088	7 39 56.2	15.493
19	11 19 12.42	2.0047	7 24 26.0	15.514
20	11 21 12.58	2.0006	7 8 54.5	15.534
21	11 23 12.49	1.9966	6 53 21.9	15.552
22	11 25 12.17	1.9927	6 37 48.2	15.570
23	11 27 11.62	1.9889	N. 6 22 13.5	15.586

SUNDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 29 10.84	1.9852	N. 6 6 37.9	15.600
1	11 31 9.84	1.9815	5 51 1.5	15.613
2	11 33 8.62	1.9779	5 35 24.3	15.625
3	11 35 7.19	1.9745	5 19 46.5	15.635
4	11 37 5.56	1.9711	5 4 8.1	15.644
5	11 39 3.72	1.9677	4 48 29.2	15.652
6	11 41 1.68	1.9644	4 32 49.9	15.658
7	11 42 59.44	1.9612	4 17 10.3	15.663
8	11 44 57.02	1.9582	4 1 30.3	15.668
9	11 46 54.42	1.9552	3 45 50.1	15.671
10	11 48 51.64	1.9522	3 30 9.8	15.672
11	11 50 48.68	1.9493	3 14 29.5	15.672
12	11 52 45.55	1.9464	2 58 49.2	15.671
13	11 54 42.25	1.9437	2 43 9.0	15.668
14	11 56 38.80	1.9411	2 27 29.0	15.665
15	11 58 35.19	1.9385	2 11 49.2	15.661
16	12 0 31.42	1.9360	1 56 9.7	15.655
17	12 2 27.51	1.9336	1 40 30.6	15.648
18	12 4 23.46	1.9313	1 24 51.9	15.641
19	12 6 19.27	1.9291	1 9 13.7	15.631
20	12 8 14.95	1.9269	0 53 36.2	15.619
21	12 10 10.50	1.9247	0 37 59.4	15.606
22	12 12 5.92	1.9227	0 22 23.3	15.593
23	12 14 1.23	1.9208	N. 0 6 47.9	15.580
24	12 15 56.42	1.9189	S. 0 8 46.6	15.567

MONDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 15 56.42	1.9189	S. 0 8 46.6	15.567
1	12 17 51.50	1.9171	0 24 20.1	15.551
2	12 19 46.48	1.9154	0 39 52.7	15.534
3	12 21 41.35	1.9138	0 55 24.2	15.516
4	12 23 36.13	1.9122	1 10 54.6	15.496
5	12 25 30.82	1.9107	1 26 23.7	15.474
6	12 27 25.42	1.9093	1 41 51.5	15.453
7	12 29 19.94	1.9080	1 57 18.0	15.431
8	12 31 14.38	1.9067	2 12 43.2	15.406
9	12 33 8.74	1.9054	2 28 6.9	15.383
10	12 35 3.03	1.9043	2 43 29.1	15.357
11	12 36 57.26	1.9033	2 58 49.7	15.330
12	12 38 51.43	1.9023	3 14 8.7	15.302
13	12 40 45.54	1.9014	3 29 26.0	15.273
14	12 42 39.60	1.9007	3 44 41.5	15.243
15	12 44 33.62	1.8999	3 59 55.2	15.212
16	12 46 27.59	1.8992	4 15 7.0	15.180
17	12 48 21.52	1.8985	4 30 16.9	15.147
18	12 50 15.41	1.8979	4 45 24.7	15.113
19	12 52 9.27	1.8975	5 0 30.5	15.079
20	12 54 3.11	1.8972	5 15 34.2	15.043
21	12 55 56.93	1.8969	5 30 35.7	15.007
22	12 57 50.73	1.8966	5 45 35.0	14.969
23	12 59 44.52	1.8963	S. 6 0 32.0	14.930

TUESDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 1 38.29	1.8962	S. 6 15 26.6	14.890
1	13 3 32.06	1.8962	6 30 18.8	14.850
2	13 5 25.83	1.8962	6 45 8.6	14.808
3	13 7 19.60	1.8963	6 59 55.8	14.765
4	13 9 13.38	1.8964	7 14 40.4	14.722
5	13 11 7.17	1.8966	7 29 22.4	14.678
6	13 13 0.97	1.8968	7 44 1.8	14.633
7	13 14 54.79	1.8972	7 58 38.4	14.587
8	13 16 48.64	1.8976	8 13 12.2	14.539
9	13 18 42.51	1.8981	8 27 43.1	14.491
10	13 20 36.41	1.8987	8 42 11.2	14.443
11	13 22 30.35	1.8993	8 56 36.3	14.393
12	13 24 24.32	1.8999	9 10 58.4	14.342
13	13 26 18.34	1.9007	9 25 17.4	14.291
14	13 28 12.41	1.9015	9 39 33.3	14.239
15	13 30 6.52	1.9023	9 53 46.1	14.187
16	13 32 0.69	1.9033	10 7 55.7	14.133
17	13 33 54.92	1.9043	10 22 2.0	14.077
18	13 35 49.20	1.9053	10 36 4.9	14.020
19	13 37 43.55	1.9064	10 50 4.4	13.964
20	13 39 37.97	1.9076	11 4 0.6	13.907
21	13 41 32.46	1.9088	11 17 53.3	13.848
22	13 43 27.03	1.9102	11 31 42.4	13.789
23	13 45 21.68	1.9115	11 45 28.0	13.730
24	13 47 16.41	1.9129	S.11 59 10.0	13.669

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 47 16.41	1.9129	S.11 59 10.0	13.669
1	13 49 11.23	1.9144	12 12 48.3	13.607
2	13 51 6.14	1.9159	12 26 22.8	13.544
3	13 53 1.14	1.9174	12 39 53.6	13.481
4	13 54 56.23	1.9191	12 53 20.6	13.417
5	13 56 51.43	1.9208	13 6 43.7	13.352
6	13 58 46.73	1.9225	13 20 2.9	13.287
7	14 0 42.13	1.9243	13 33 18.1	13.220
8	14 2 37.65	1.9262	13 46 29.3	13.152
9	14 4 33.28	1.9281	13 59 36.4	13.084
10	14 6 29.02	1.9300	14 12 39.4	13.015
11	14 8 24.88	1.9321	14 25 38.2	12.945
12	14 10 20.87	1.9342	14 38 32.8	12.875
13	14 12 16.98	1.9363	14 51 23.2	12.803
14	14 14 13.22	1.9384	15 4 9.2	12.731
15	14 16 9.59	1.9407	15 16 50.9	12.658
16	14 18 6.10	1.9429	15 29 28.2	12.584
17	14 20 2.74	1.9452	15 42 1.0	12.510
18	14 21 59.52	1.9475	15 54 29.4	12.435
19	14 23 56.44	1.9499	16 6 53.2	12.359
20	14 25 53.51	1.9524	16 19 12.4	12.282
21	14 27 50.73	1.9549	16 31 27.0	12.204
22	14 29 48.10	1.9574	16 43 36.9	12.125
23	14 31 45.62	1.9599	S.16 55 42.0	12.046

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 33 43.29	1.9625	S.17 7 42.4	11.967
1	14 35 41.12	1.9652	17 19 38.0	11.886
2	14 37 39.12	1.9680	17 31 28.7	11.804
3	14 39 37.28	1.9707	17 43 14.4	11.721
4	14 41 35.60	1.9734	17 54 55.2	11.638
5	14 43 34.09	1.9762	18 6 31.0	11.555
6	14 45 32.75	1.9791	18 18 1.8	11.471
7	14 47 31.58	1.9820	18 29 27.5	11.385
8	14 49 30.59	1.9850	18 40 48.0	11.299
9	14 51 29.78	1.9879	18 52 3.3	11.212
10	14 53 29.14	1.9909	19 3 13.4	11.124
11	14 55 28.69	1.9940	19 14 18.2	11.036
12	14 57 28.42	1.9970	19 25 17.7	10.947
13	14 59 28.33	2.0001	19 36 11.8	10.857
14	15 1 28.43	2.0032	19 47 0.5	10.767
15	15 3 28.72	2.0064	19 57 43.8	10.676
16	15 5 29.20	2.0096	20 8 21.6	10.583
17	15 7 29.87	2.0128	20 18 53.8	10.490
18	15 9 30.73	2.0160	20 29 20.4	10.397
19	15 11 31.79	2.0192	20 39 41.4	10.303
20	15 13 33.04	2.0225	20 49 56.7	10.208
21	15 15 34.49	2.0258	21 0 6.4	10.113
22	15 17 36.14	2.0291	21 10 10.3	10.016
23	15 19 37.99	2.0324	21 20 8.3	9.918
24	15 21 40.03	2.0358	S.21 30 0.5	9.821

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 21 40.03	2.0358	S.21 30 0.5	9.821
1	15 23 42.28	2.0392	21 39 46.8	9.722
2	15 25 44.73	2.0426	21 49 27.2	9.623
3	15 27 47.39	2.0460	21 59 1.6	9.523
4	15 29 50.25	2.0494	22 8 29.9	9.422
5	15 31 53.32	2.0529	22 17 52.2	9.321
6	15 33 56.60	2.0563	22 27 8.4	9.218
7	15 36 0.08	2.0597	22 36 18.4	9.115
8	15 38 3.77	2.0632	22 45 22.2	9.012
9	15 40 7.67	2.0667	22 54 19.8	8.908
10	15 42 11.78	2.0702	23 3 11.2	8.803
11	15 44 16.10	2.0736	23 11 56.2	8.697
12	15 46 20.62	2.0771	23 20 34.8	8.590
13	15 48 25.35	2.0807	23 29 7.0	8.483
14	15 50 30.30	2.0842	23 37 32.8	8.376
15	15 52 35.46	2.0877	23 45 52.1	8.267
16	15 54 40.83	2.0912	23 54 4.9	8.158
17	15 56 46.40	2.0947	24 2 11.1	8.048
18	15 58 52.19	2.0982	24 10 10.7	7.937
19	16 0 58.19	2.1017	24 18 3.6	7.826
20	16 3 4.39	2.1051	24 25 49.8	7.715
21	16 5 10.80	2.1086	24 33 29.4	7.603
22	16 7 17.42	2.1121	24 41 2.2	7.490
23	16 9 24.25	2.1156	S.24 48 28.2	7.376

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 11 31.29	2.1190	S.24 55 47.3	7.261
1	16 13 38.53	2.1224	25 2 59.5	7.146
2	16 15 45.98	2.1259	25 10 4.8	7.031
3	16 17 53.64	2.1293	25 17 3.2	6.915
4	16 20 1.50	2.1327	25 23 54.6	6.797
5	16 22 9.56	2.1360	25 30 38.9	6.679
6	16 24 17.82	2.1394	25 37 16.1	6.561
7	16 26 26.29	2.1427	25 43 46.2	6.442
8	16 28 34.95	2.1460	25 50 9.2	6.323
9	16 30 43.81	2.1493	25 56 25.0	6.203
10	16 32 52.87	2.1526	26 2 33.6	6.083
11	16 35 2.12	2.1559	26 8 34.9	5.962
12	16 37 11.57	2.1591	26 14 29.0	5.840
13	16 39 21.21	2.1622	26 20 15.7	5.718
14	16 41 31.04	2.1653	26 25 55.1	5.595
15	16 43 41.05	2.1684	26 31 27.1	5.471
16	16 45 51.25	2.1715	26 36 51.6	5.347
17	16 48 1.63	2.1746	26 42 8.7	5.222
18	16 50 12.20	2.1777	26 47 18.3	5.097
19	16 52 22.95	2.1806	26 52 20.4	4.972
20	16 54 33.87	2.1835	26 57 14.9	4.845
21	16 56 44.97	2.1864	27 2 1.8	4.718
22	16 58 56.24	2.1893	27 6 41.1	4.591
23	17 1 7.68	2.1921	27 11 12.7	4.463
24	17 3 19.29	2.1948	S.27 15 36.6	4.334

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 17.					**TUESDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 3 19.29	2.1948	S.27 15 36.6	4.334	0	18 50 47.22	2.2577	S.28 8 39.2	2.218
1	17 5 31.06	2.1975	27 19 52.8	4.206	1	18 53 2.67	2.2573	28 6 21.9	2.357
2	17 7 42.99	2.2002	27 24 1.3	4.077	2	18 55 18.10	2.2569	28 3 56.3	2.497
3	17 9 55.09	2.2029	27 28 2.0	3.947	3	18 57 33.50	2.2563	28 1 22.2	2.638
4	17 12 7.34	2.2054	27 31 54.9	3.817	4	18 59 48.86	2.2558	27 58 39.7	2.778
5	17 14 19.74	2.2080	27 35 40.0	3.687	5	19 2 4.19	2.2552	27 55 48.9	2.917
6	17 16 32.30	2.2106	27 39 17.3	3.556	6	19 4 19.48	2.2544	27 52 49.7	3.056
7	17 18 45.01	2.2130	27 42 46.7	3.424	7	19 6 34.72	2.2536	27 49 42.2	3.195
8	17 20 57.86	2.2153	27 46 8.1	3.291	8	19 8 49.91	2.2528	27 46 26.3	3.335
9	17 23 10.84	2.2175	27 49 21.6	3.158	9	19 11 5.06	2.2520	27 43 2.0	3.474
10	17 25 23.96	2.2198	27 52 27.1	3.026	10	19 13 20.15	2.2509	27 39 29.4	3.613
11	17 27 37.22	2.2221	27 55 24.7	2.893	11	19 15 35.17	2.2498	27 35 48.5	3.752
12	17 29 50.61	2.2242	27 58 14.3	2.759	12	19 17 50.13	2.2487	27 31 59.2	3.891
13	17 32 4.13	2.2263	28 0 55.8	2.625	13	19 20 5.02	2.2476	27 28 1.6	4.028
14	17 34 17.77	2.2283	28 3 29.3	2.491	14	19 22 19.84	2.2464	27 23 55.8	4.166
15	17 36 31.53	2.2303	28 5 54.7	2.356	15	19 24 34.59	2.2452	27 19 41.7	4.304
16	17 38 45.40	2.2322	28 8 12.0	2.221	16	19 26 49.26	2.2438	27 15 19.3	4.441
17	17 40 59.39	2.2341	28 10 21.2	2.085	17	19 29 3.84	2.2423	27 10 48.7	4.578
18	17 43 13.49	2.2358	28 12 22.2	1.949	18	19 31 18.33	2.2408	27 6 9.9	4.715
19	17 45 27.69	2.2376	28 14 15.1	1.813	19	19 33 32.73	2.2393	27 1 22.9	4.852
20	17 47 42.00	2.2393	28 15 59.8	1.677	20	19 35 47.04	2.2378	26 56 27.7	4.988
21	17 49 56.41	2.2409	28 17 36.3	1.540	21	19 38 1.26	2.2361	26 51 24.3	5.125
22	17 52 10.91	2.2424	28 19 4.6	1.403	22	19 40 15.38	2.2344	26 46 12.7	5.261
23	17 54 25.50	2.2438	S.28 20 24.7	1.266	23	19 42 29.39	2.2327	S.26 40 53.0	5.396
	MONDAY 18.					**WEDNESDAY 20.**			
0	17 56 40.17	2.2452	S.28 21 36.6	1.129	0	19 44 43.30	2.2309	S.26 35 25.2	5.531
1	17 58 54.93	2.2466	28 22 40.2	0.991	1	19 46 57.10	2.2290	26 29 49.3	5.666
2	18 1 9.76	2.2479	28 23 35.5	0.853	2	19 49 10.78	2.2271	26 24 5.3	5.800
3	18 3 24.67	2.2491	28 24 22.5	0.714	3	19 51 24.35	2.2252	26 18 13.3	5.934
4	18 5 39.65	2.2502	28 25 1.2	0.576	4	19 53 37.80	2.2232	26 12 13.2	6.067
5	18 7 54.69	2.2512	28 25 31.6	0.437	5	19 55 51.13	2.2212	26 6 5.2	6.200
6	18 10 9.79	2.2522	28 25 53.7	0.298	6	19 58 4.34	2.2192	25 59 49.2	6.333
7	18 12 24.95	2.2531	28 26 7.4	0.159	7	20 0 17.43	2.2170	25 53 25.3	6.465
8	18 14 40.16	2.2539	28 26 12.8	− 0.021	8	20 2 30.38	2.2148	25 46 53.4	6.597
9	18 16 55.42	2.2547	28 26 9.9	+ 0.118	9	20 4 43.20	2.2126	25 40 13.6	6.728
10	18 19 10.73	2.2554	28 25 58.6	0.258	10	20 6 55.89	2.2103	25 33 26.0	6.859
11	18 21 26.07	2.2560	28 25 38.9	0.397	11	20 9 8.44	2.2080	25 26 30.5	6.990
12	18 23 41.45	2.2566	28 25 10.9	0.537	12	20 11 20.85	2.2057	25 19 27.2	7.120
13	18 25 56.86	2.2571	28 24 34.5	0.677	13	20 13 33.12	2.2033	25 12 16.1	7.249
14	18 28 12.30	2.2575	28 23 49.6	0.817	14	20 15 45.25	2.2010	25 4 57.3	7.378
15	18 30 27.76	2.2578	28 22 56.4	0.957	15	20 17 57.24	2.1986	24 57 30.8	7.506
16	18 32 43.24	2.2581	28 21 54.8	1.097	16	20 20 9.08	2.1961	24 49 56.6	7.633
17	18 34 58.73	2.2583	28 20 44.8	1.238	17	20 22 20.77	2.1936	24 42 14.8	7.761
18	18 37 14.24	2.2585	28 19 26.3	1.378	18	20 24 32.31	2.1911	24 34 25.3	7.888
19	18 39 29.75	2.2585	28 17 59.4	1.517	19	20 26 43.70	2.1886	24 26 28.2	8.014
20	18 41 45.26	2.2584	28 16 24.2	1.657	20	20 28 54.94	2.1860	24 18 23.6	8.139
21	18 44 0.76	2.2583	28 14 40.6	1.797	21	20 31 6.02	2.1834	24 10 11.5	8.264
22	18 46 16.26	2.2582	28 12 48.6	1.937	22	20 33 16.95	2.1808	24 1 51.9	8.388
23	18 48 31.75	2.2580	28 10 48.1	2.078	23	20 35 27.72	2.1782	23 53 24.9	8.513
24	18 50 47.22	2.2577	S.28 8 39.2	2.218	24	20 37 38.33	2.1756	S.23 44 50.4	8.636

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 21.					**SATURDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	20 37 38.33	2.1756	S. 23 44 50.4	8.636	0	22 18 59.19	2.0531	S. 14 42 15.6	13.655
1	20 39 48.79	2.1729	23 36 8.5	8.758	1	22 21 2.32	2.0512	14 28 33.8	13.738
2	20 41 59.08	2.1702	23 27 19.4	8.879	2	22 23 5.33	2.0493	14 14 47.0	13.821
3	20 44 9.21	2.1675	23 18 23.0	9.001	3	22 25 8.23	2.0474	14 0 55.3	13.902
4	20 46 19.18	2.1648	23 9 19.3	9.122	4	22 27 11.02	2.0456	13 46 58.8	13.981
5	20 48 28.99	2.1621	23 0 8.4	9.242	5	22 29 13.70	2.0438	13 32 57.6	14.059
6	20 50 38.63	2.1593	22 50 50.3	9.361	6	22 31 16.28	2.0422	13 18 51.7	14.137
7	20 52 48.11	2.1566	22 41 25.1	9.479	7	22 33 18.76	2.0405	13 4 41.1	14.214
8	20 54 57.42	2.1538	22 31 52.8	9.597	8	22 35 21.14	2.0389	12 50 26.0	14.289
9	20 57 6.57	2.1511	22 22 13.4	9.715	9	22 37 23.43	2.0374	12 36 6.4	14.364
10	20 59 15.55	2.1483	22 12 27.0	9.831	10	22 39 25.63	2.0359	12 21 42.3	14.438
11	21 1 24.37	2.1456	22 2 33.7	9.946	11	22 41 27.74	2.0345	12 7 13.8	14.511
12	21 3 33.02	2.1428	21 52 33.5	10.061	12	22 43 29.77	2.0331	11 52 41.0	14.582
13	21 5 41.51	2.1401	21 42 26.4	10.176	13	22 45 31.71	2.0318	11 38 4.0	14.652
14	21 7 49.83	2.1373	21 32 12.4	10.290	14	22 47 33.58	2.0306	11 23 22.8	14.722
15	21 9 57.98	2.1345	21 21 51.6	10.402	15	22 49 35.37	2.0293	11 8 37.4	14.790
16	21 12 5.97	2.1317	21 11 24.1	10.514	16	22 51 37.09	2.0281	10 53 48.0	14.857
17	21 14 13.79	2.1289	21 0 49.9	10.626	17	22 53 38.74	2.0269	10 38 54.6	14.922
18	21 16 21.44	2.1262	20 50 9.0	10.736	18	22 55 40.32	2.0258	10 23 57.3	14.987
19	21 18 28.93	2.1235	20 39 21.5	10.846	19	22 57 41.84	2.0249	10 8 56.2	15.051
20	21 20 36.26	2.1207	20 28 27.5	10.955	20	22 59 43.31	2.0240	9 53 51.2	15.114
21	21 22 43.42	2.1180	20 17 26.9	11.064	21	23 1 44.72	2.0231	9 38 42.5	15.176
22	21 24 50.42	2.1153	20 6 19.8	11.171	22	23 3 46.08	2.0223	9 23 30.1	15.236
23	21 26 57.26	2.1126	S. 19 55 6.4	11.277	23	23 5 47.39	2.0215	S. 9 8 14.2	15.294
	FRIDAY 22.					**SUNDAY 24.**			
0	21 29 3.94	2.1099	S. 19 43 46.6	11.382	0	23 7 48.66	2.0208	S. 8 52 54.8	15.352
1	21 31 10.45	2.1073	19 32 20.5	11.487	1	23 9 49.89	2.0202	8 37 31.9	15.409
2	21 33 16.81	2.1047	19 20 48.1	11.592	2	23 11 51.08	2.0196	8 22 5.7	15.464
3	21 35 23.01	2.1020	19 9 9.5	11.695	3	23 13 52.24	2.0191	8 6 36.2	15.519
4	21 37 29.05	2.0993	18 57 24.7	11.797	4	23 15 53.38	2.0187	7 51 3.4	15.572
5	21 39 34.93	2.0967	18 45 33.8	11.899	5	23 17 54.49	2.0183	7 35 27.5	15.624
6	21 41 40.66	2.0942	18 33 36.8	12.000	6	23 19 55.58	2.0181	7 19 48.5	15.675
7	21 43 46.24	2.0917	18 21 33.8	12.100	7	23 21 56.66	2.0178	7 4 6.5	15.724
8	21 45 51.66	2.0891	18 9 24.8	12.198	8	23 23 57.72	2.0176	6 48 21.6	15.772
9	21 47 56.93	2.0866	17 57 10.0	12.296	9	23 25 58.77	2.0175	6 32 33.8	15.820
10	21 50 2.05	2.0842	17 44 49.3	12.393	10	23 27 59.82	2.0175	6 16 43.2	15.866
11	21 52 7.03	2.0817	17 32 22.8	12.490	11	23 30 0.87	2.0175	6 0 49.9	15.910
12	21 54 11.86	2.0793	17 19 50.5	12.586	12	23 32 1.92	2.0176	5 44 54.0	15.953
13	21 56 16.55	2.0770	17 7 12.5	12.680	13	23 34 2.98	2.0178	5 28 55.5	15.996
14	21 58 21.10	2.0746	16 54 28.9	12.773	14	23 36 4.06	2.0181	5 12 54.5	16.037
15	22 0 25.50	2.0723	16 41 39.8	12.865	15	23 38 5.15	2.0183	4 56 51.1	16.076
16	22 2 29.77	2.0700	16 28 45.1	12.957	16	23 40 6.26	2.0187	4 40 45.4	16.114
17	22 4 33.90	2.0677	16 15 44.9	13.047	17	23 42 7.40	2.0192	4 24 37.4	16.152
18	22 6 37.89	2.0654	16 2 39.4	13.137	18	23 44 8.57	2.0197	4 8 27.2	16.188
19	22 8 41.75	2.0633	15 49 28.5	13.226	19	23 46 9.77	2.0203	3 52 14.9	16.222
20	22 10 45.49	2.0612	15 36 12.3	13.314	20	23 48 11.01	2.0210	3 36 0.6	16.254
21	22 12 49.10	2.0592	15 22 50.8	13.402	21	23 50 12.29	2.0218	3 19 44.4	16.286
22	22 14 52.59	2.0571	15 9 24.1	13.487	22	23 52 13.62	2.0226	3 3 26.3	16.317
23	22 16 55.95	2.0550	14 55 52.4	13.571	23	23 54 15.00	2.0235	2 47 6.4	16.345
24	22 18 59.19	2.0531	S. 14 42 15.6	13.655	24	23 56 16.44	2.0245	S. 2 30 44.9	16.372

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 25.					WEDNESDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 56 16.44	2.0245	S. 2 30 44.9	16.372	0	1 36 3.01	2.1631	N.10 39 8.8	15.936
1	23 58 17.94	2.0255	2 14 21.8	16.398	1	1 38 12.94	2.1678	10 55 3.5	15.887
2	0 0 19.50	2.0266	1 57 57.1	16.424	2	1 40 23.15	2.1726	11 10 55.2	15.836
3	0 2 21.13	2.0278	1 41 30.9	16.448	3	1 42 33.65	2.1775	11 26 43.8	15.783
4	0 4 22.84	2.0291	1 25 3.3	16.470	4	1 44 44.45	2.1826	11 42 29.2	15.728
5	0 6 24.63	2.0305	1 8 34.5	16.490	5	1 46 55.56	2.1877	11 58 11.2	15.672
6	0 8 26.50	2.0319	0 52 4.5	16.509	6	1 49 6.97	2.1927	12 13 49.8	15.613
7	0 10 28.46	2.0334	0 35 33.4	16.527	7	1 51 18.69	2.1979	12 29 24.8	15.553
8	0 12 30.51	2.0350	0 19 1.2	16.544	8	1 53 30.72	2.2032	12 44 56.2	15.492
9	0 14 32.66	2.0367	S. 0 2 28.1	16.559	9	1 55 43.07	2.2085	13 0 23.9	15.429
10	0 16 34.91	2.0384	N. 0 14 5.9	16.573	10	1 57 55.74	2.2139	13 15 47.7	15.363
11	0 18 37.27	2.0402	0 30 40.7	16.585	11	2 0 8.74	2.2193	13 31 7.5	15.296
12	0 20 39.74	2.0421	0 47 16.1	16.595	12	2 2 22.06	2.2248	13 46 23.2	15.227
13	0 22 42.32	2.0441	1 3 52.1	16.605	13	2 4 35.72	2.2304	14 1 34.7	15.156
14	0 24 45.03	2.0462	1 20 28.7	16.613	14	2 6 49.71	2.2360	14 16 41.9	15.083
15	0 26 47.86	2.0483	1 37 5.7	16.619	15	2 9 4.04	2.2417	14 31 44.7	15.008
16	0 28 50.82	2.0505	1 53 43.0	16.623	16	2 11 18.71	2.2474	14 46 42.9	14.932
17	0 30 53.92	2.0528	2 10 20.5	16.626	17	2 13 33.73	2.2532	15 1 36.5	14.854
18	0 32 57.16	2.0552	2 26 58.1	16.627	18	2 15 49.10	2.2591	15 16 25.4	14.774
19	0 35 0.54	2.0576	2 43 35.8	16.628	19	2 18 4.82	2.2650	15 31 9.4	14.692
20	0 37 4.07	2.0602	3 0 13.5	16.627	20	2 20 20.90	2.2710	15 45 48.4	14.608
21	0 39 7.76	2.0628	3 16 51.1	16.625	21	2 22 37.34	2.2770	16 0 22.4	14.523
22	0 41 11.61	2.0655	3 33 28.5	16.621	22	2 24 54.14	2.2830	16 14 51.2	14.435
23	0 43 15.62	2.0683	N. 3 50 5.6	16.614	23	2 27 11.30	2.2891	N.16 29 14.6	14.345
	TUESDAY 26.					THURSDAY 28.			
0	0 45 19.80	2.0711	N. 4 6 42.2	16.606	0	2 29 28.83	2.2952	N.16 43 32.6	14.254
1	0 47 24.15	2.0740	4 23 18.3	16.597	1	2 31 46.73	2.3014	16 57 45.1	14.161
2	0 49 28.68	2.0771	4 39 53.9	16.587	2	2 34 5.00	2.3077	17 11 51.9	14.066
3	0 51 33.40	2.0802	4 56 28.8	16.575	3	2 36 23.65	2.3139	17 25 53.0	13.969
4	0 53 38.30	2.0833	5 13 2.9	16.561	4	2 38 42.67	2.3202	17 39 48.2	13.870
5	0 55 43.39	2.0865	5 29 36.1	16.545	5	2 41 2.07	2.3265	17 53 37.4	13.770
6	0 57 48.68	2.0899	5 46 8.3	16.527	6	2 43 21.85	2.3328	18 7 20.6	13.668
7	0 59 54.18	2.0933	6 2 39.4	16.509	7	2 45 42.01	2.3392	18 20 57.5	13.563
8	1 1 59.88	2.0967	6 19 9.4	16.489	8	2 48 2.56	2.3457	18 34 28.1	13.457
9	1 4 5.79	2.1002	6 35 38.2	16.468	9	2 50 23.49	2.3521	18 47 52.3	13.349
10	1 6 11.91	2.1039	6 52 5.6	16.444	10	2 52 44.81	2.3586	19 1 10.0	13.239
11	1 8 18.26	2.1077	7 8 31.5	16.418	11	2 55 6.52	2.3651	19 14 21.0	13.127
12	1 10 24.84	2.1116	7 24 55.8	16.392	12	2 57 28.62	2.3716	19 27 25.2	13.013
13	1 12 31.65	2.1154	7 41 18.5	16.363	13	2 59 51.11	2.3781	19 40 22.5	12.898
14	1 14 38.69	2.1193	7 57 39.4	16.332	14	3 2 13.99	2.3846	19 53 12.9	12.781
15	1 16 45.97	2.1234	8 13 58.4	16.301	15	3 4 37.26	2.3912	20 5 56.2	12.662
16	1 18 53.50	2.1275	8 30 15.5	16.268	16	3 7 0.93	2.3977	20 18 32.3	12.541
17	1 21 1.27	2.1316	8 46 30.5	16.232	17	3 9 24.99	2.4042	20 31 1.1	12.418
18	1 23 9.29	2.1358	9 2 43.3	16.194	18	3 11 49.44	2.4108	20 43 22.4	12.293
19	1 25 17.57	2.1402	9 18 53.8	16.156	19	3 14 14.29	2.4174	20 55 36.2	12.166
20	1 27 26.12	2.1446	9 35 2.0	16.116	20	3 16 39.53	2.4239	21 7 42.3	12.037
21	1 29 34.93	2.1491	9 51 7.7	16.073	21	3 19 5.16	2.4304	21 19 40.7	11.907
22	1 31 44.01	2.1537	10 7 10.8	16.029	22	3 21 31.18	2.4370	21 31 31.2	11.775
23	1 33 53.37	2.1583	10 23 11.2	15.983	23	3 23 57.60	2.4436	21 43 13.7	11.642
24	1 36 3.01	2.1631	N.10 39 8.8	15.936	24	3 26 24.41	2.4501	N.21 54 48.2	11.507

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 26 24.41	2.4501	N.21 54 48.2	11.507
1	3 28 51.61	2.4566	22 6 14.5	11.369
2	3 31 19.20	2.4630	22 17 32.5	11.230
3	3 33 47.17	2.4694	22 28 42.1	11.089
4	3 36 15.53	2.4759	22 39 43.2	10.947
5	3 38 44.28	2.4823	22 50 35.7	10.803
6	3 41 13.41	2.4886	23 1 19.5	10.657
7	3 43 42.92	2.4949	23 11 54.5	10.509
8	3 46 12.80	2.5012	23 22 20.6	10.359
9	3 48 43.06	2.5074	23 32 37.6	10.208
10	3 51 13.69	2.5136	23 42 45.5	10.056
11	3 53 44.69	2.5197	23 52 44.3	9.902
12	3 56 16.06	2.5258	24 2 33.8	9.747
13	3 58 47.79	2.5318	24 12 13.9	9.589
14	4 1 19.88	2.5378	24 21 44.5	9.430
15	4 3 52.32	2.5437	24 31 5.5	9.269
16	4 6 25.12	2.5496	24 40 16.8	9.107
17	4 8 58.26	2.5553	24 49 18.3	8.943
18	4 11 31.75	2.5610	24 58 9.9	8.778
19	4 14 5.58	2.5666	25 6 51.6	8.612
20	4 16 39.74	2.5720	25 15 23.3	8.444
21	4 19 14.22	2.5774	25 23 44.9	8.274
22	4 21 49.02	2.5828	25 31 56.2	8.103
23	4 24 24.15	2.5881	N.25 39 57.3	7.932

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 26 59.59	2.5932	N.25 47 48.0	7.758
1	4 29 35.33	2.5983	25 55 28.3	7.584
2	4 32 11.37	2.6032	26 2 58.1	7.408
3	4 34 47.71	2.6080	26 10 17.2	7.230
4	4 37 24.33	2.6127	26 17 25.7	7.052
5	4 40 1.23	2.6172	26 24 23.4	6.872
6	4 42 38.39	2.6216	26 31 10.3	6.691
7	4 45 15.82	2.6260	26 37 46.3	6.509
8	4 47 53.51	2.6302	26 44 11.4	6.326
9	4 50 31.45	2.6343	26 50 25.4	6.142
10	4 53 9.63	2.6383	26 56 28.4	5.957
11	4 55 48.05	2.6422	27 2 20.3	5.771
12	4 58 26.69	2.6458	27 8 0.9	5.584
13	5 1 5.55	2.6494	27 13 30.3	5.396
14	5 3 44.62	2.6528	27 18 48.4	5.207
15	5 6 23.89	2.6561	27 23 55.1	5.017
16	5 9 3.35	2.6592	27 28 50.4	4.826
17	5 11 43.00	2.6622	27 33 34.2	4.635
18	5 14 22.82	2.6651	27 38 6.6	4.444
19	5 17 2.81	2.6677	27 42 27.5	4.251
20	5 19 42.95	2.6702	27 46 36.7	4.057
21	5 22 23.24	2.6726	27 50 34.3	3.863
22	5 25 3.66	2.6748	27 54 20.2	3.668
23	5 27 44.21	2.6768	27 57 54.4	3.473
24	5 30 24.88	2.6787	N.28 1 17.0	3.278

SUNDAY, OCTOBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 30 24.88	2.6787	N.28 1 17.0	3.278

PHASES OF THE MOON.

		d	h	m
☾ Last Quarter . .	Sept.	2	21	41.5
● New Moon		9	19	4.7
☽ First Quarter		17	16	18.8
○ Full Moon		25	8	23.2

		d	h
☾ Perigee	Sept.	3	21.6
☾ Apogee		17	2.3
☾ Perigee		29	3.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Fomalhaut	W.	73° 55′ 23″	2541	75° 35′ 39″	2534	77° 16′ 5″	2528	78° 56′ 39″	2522
	α Pegasi	W.	53 52 21	2830	55 26 10	2805	57 0 31	2784	58 35 20	2763
	Pollux	E.	67 25 24	2327	65 40 4	2324	63 54 40	2321	62 9 11	2318
	Sun	E.	114 58 39	2646	113 20 46	2641	111 42 47	2638	110 4 44	2635
2	Fomalhaut	W.	87 21 11	2502	89 2 21	2500	90 43 34	2498	92 24 50	2496
	α Pegasi	W.	66 35 23	2686	68 12 22	2675	69 49 36	2664	71 27 4	2654
	α Arietis	W.	22 58 17	2616	24 36 50	2575	26 16 19	2541	27 56 35	2512
	Pollux	E.	53 20 45	2305	51 34 53	2302	49 48 57	2301	48 2 59	2299
	Sun	E.	101 53 19	2619	100 14 50	2616	98 36 17	2614	96 57 41	2612
3	α Pegasi	W.	79 37 16	2620	81 15 44	2615	82 54 18	2612	84 32 57	2609
	α Arietis	W.	36 26 11	2422	38 9 15	2410	39 52 35	2400	41 36 10	2391
	Pollux	E.	39 12 30	2291	37 26 18	2291	35 40 5	2290	33 53 51	2289
	Sun	E.	88 43 58	2602	87 5 6	2601	85 26 12	2599	83 47 16	2599
4	α Pegasi	W.	92 46 53	2604	94 25 42	2607	96 4 28	2609	97 43 11	2611
	α Arietis	W.	50 16 44	2361	52 1 15	2357	53 45 51	2354	55 30 32	2351
	Jupiter	W.	26 12 25	2359	27 56 58	2353	29 41 41	2347	31 26 32	2342
	Sun	E.	75 32 20	2596	73 53 19	2595	72 14 17	2595	70 35 15	2596
5	α Arietis	W.	64 14 46	2344	65 59 42	2343	67 44 39	2343	69 29 36	2344
	Jupiter	W.	40 12 8	2330	41 57 24	2328	43 42 42	2328	45 28 0	2328
	Aldebaran	W.	34 12 57	2465	35 55 0	2451	37 37 22	2440	39 20 0	2430
	Sun	E.	62 20 20	2600	60 41 25	2602	59 2 33	2604	57 23 43	2605
6	α Arietis	W.	78 13 58	2351	79 58 43	2354	81 43 24	2357	83 28 0	2360
	Jupiter	W.	54 14 18	2335	55 59 27	2337	57 44 33	2339	59 29 35	2342
	Aldebaran	W.	47 55 48	2405	49 39 16	2403	51 22 47	2401	53 6 20	2401
	Sun	E.	49 10 22	2621	47 31 55	2624	45 53 33	2629	44 15 17	2633
7	α Arietis	W.	92 9 41	2382	93 53 41	2388	95 37 33	2394	97 21 16	2400
	Jupiter	W.	68 13 32	2362	69 58 2	2367	71 42 24	2372	73 26 39	2378
	Aldebaran	W.	61 43 57	2408	63 27 20	2411	65 10 39	2415	66 53 53	2419
	Sun	E.	36 5 38	2662	34 28 7	2669	32 50 45	2677	31 13 34	2684
8	Jupiter	W.	82 5 42	2411	83 49 1	2418	85 32 10	2426	87 15 8	2434
	Aldebaran	W.	75 28 19	2447	77 10 47	2453	78 53 6	2461	80 35 14	2469
	Pollux	W.	31 25 26	2391	33 9 14	2398	34 52 51	2405	36 36 18	2413
	Sun	E.	23 10 36	2736	21 34 44	2750	19 59 11	2766	18 23 58	2783
11	Sun	W.	14 50 21	3038	16 19 47	3043	17 49 6	3051	19 18 16	3060
	Antares	E.	64 46 59	2640	63 8 58	2652	61 31 14	2665	59 53 47	2678
	α Aquilæ	E.	112 10 29	3640	110 52 38	3632	109 34 38	3624	108 16 30	3620
12	Sun	W.	26 41 15	3110	28 9 12	3122	29 36 55	3134	31 4 23	3147
	Antares	E.	51 50 54	2743	50 15 11	2756	48 39 46	2769	47 4 37	2782
	α Aquilæ	E.	101 45 7	3619	100 26 53	3623	99 8 43	3628	97 50 39	3635
13	Sun	W.	38 18 1	3209	39 44 0	3220	41 9 45	3232	42 35 16	3245
	Antares	E.	39 13 2	2844	37 39 31	2856	36 6 16	2868	34 33 16	2880
	α Aquilæ	E.	91 22 23	3681	90 5 16	3693	88 48 21	3706	87 31 40	3719

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff.
1	Fomalhaut	W.	80° 37′ 21″	2517	82° 18′ 10″	2513	83° 59′ 5″	2509	85° 40′ 6″	2506
	α Pegasi	W.	60 10 36	2745	61 46 16	2728	63 22 19	2713	64 58 42	2699
	Pollux	E.	60 23 38	2315	58 38 0	2313	56 52 19	2310	55 6 34	2307
	Sun	E.	108 26 36	2631	106 48 23	2627	105 10 6	2624	103 31 44	2622
2	Fomalhaut	W.	94 6 9	2495	95 47 29	2495	97 28 49	2494	99 10 10	2495
	α Pegasi	W.	73 4 46	2646	74 42 39	2638	76 20 42	2631	77 58 55	2625
	α Arietis	W.	29 37 32	2487	31 19 3	2467	33 1 2	2450	34 43 26	2435
	Pollux	E.	46 16 58	2297	44 30 54	2296	42 44 48	2294	40 58 40	2293
	Sun	E.	95 19 2	2610	93 40 20	2607	92 1 35	2606	90 22 48	2604
3	α Pegasi	W.	86 11 40	2607	87 50 26	2605	89 29 14	2604	91 8 3	2604
	α Arietis	W.	43 19 57	2384	45 3 55	2377	46 48 3	2371	48 32 20	2366
	Pollux	E.	32 7 36	2289	30 21 20	2289	28 35 4	2289	26 48 48	2289
	Sun	E.	82 8 19	2597	80 29 20	2597	78 50 21	2596	77 11 21	2596
4	α Pegasi	W.	99 21 51	2615	101 0 26	2620	102 38 54	2625	104 17 15	2632
	α Arietis	W.	57 15 17	2348	59 0 6	2347	60 44 57	2345	62 29 51	2344
	Jupiter	W.	33 11 30	2338	34 56 34	2335	36 41 42	2333	38 26 54	2331
	Sun	E.	68 56 14	2596	67 17 13	2597	65 38 14	2598	63 59 16	2599
5	α Arietis	W.	71 14 32	2344	72 59 27	2346	74 44 20	2348	76 29 10	2349
	Jupiter	W.	47 13 18	2328	48 58 36	2330	50 43 52	2331	52 29 6	2333
	Aldebaran	W.	41 2 52	2422	42 45 55	2417	44 29 6	2412	46 12 24	2408
	Sun	E.	55 44 55	2608	54 6 11	2610	52 27 30	2614	50 48 54	2617
6	α Arietis	W.	85 12 32	2364	86 56 58	2368	88 41 19	2373	90 25 33	2377
	Jupiter	W.	61 14 33	2346	62 59 26	2349	64 44 14	2353	66 28 56	2357
	Aldebaran	W.	54 49 54	2401	56 33 28	2402	58 17 0	2403	60 0 30	2405
	Sun	E.	42 37 7	2638	40 59 4	2643	39 21 7	2649	37 43 18	2656
7	α Arietis	W.	99 4 51	2407	100 48 16	2414	102 31 31	2422	104 14 35	2429
	Jupiter	W.	75 10 45	2384	76 54 43	2390	78 38 32	2396	80 22 12	2403
	Aldebaran	W.	68 37 1	2424	70 20 2	2429	72 2 56	2434	73 45 42	2441
	Sun	E.	29 36 33	2693	27 59 44	2702	26 23 7	2713	24 46 44	2724
8	Jupiter	W.	88 57 54	2443	90 40 28	2451	92 22 50	2460	94 4 59	2470
	Aldebaran	W.	82 17 11	2477	83 58 57	2485	85 40 31	2494	87 21 53	2504
	Pollux	W.	38 19 34	2422	40 2 38	2430	41 45 30	2439	43 28 9	2448
	Sun	E.	16 49 8	2804	15 14 45	2829	13 40 55	2860	12 7 45	2896
11	Sun	W.	20 47 15	3069	22 16 3	3078	23 44 40	3088	25 13 4	3099
	Antares	E.	58 16 38	2691	56 39 46	2704	55 3 11	2717	53 26 54	2730
	α Aquilæ	E.	106 58 17	3616	105 40 0	3615	104 21 42	3615	103 3 24	3616
12	Sun	W.	32 31 36	3159	33 58 34	3171	35 25 18	3183	36 51 47	3196
	Antares	E.	45 29 45	2795	43 55 10	2807	42 20 51	2820	40 46 49	2831
	α Aquilæ	E.	96 32 42	3642	95 14 53	3650	93 57 13	3660	92 39 43	3669
13	Sun	W.	44 0 32	3257	45 25 34	3268	46 50 23	3280	48 14 58	3291
	Antares	E.	33 0 31	2891	31 28 1	2902	29 55 45	2913	28 23 43	2924
	α Aquilæ	E.	86 15 13	3734	84 59 2	3748	83 43 6	3765	82 27 27	3781

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
14	Sun	W.	49° 39′ 20″	3302	51° 3′ 29″	3313	52° 27′ 26″	3323	53° 51′ 11″	3332
	Spica	W.	19 7 45	2951	20 38 59	2960	22 10 2	2969	23 40 54	2976
	α Aquilæ	E.	81 12 5	3799	79 57 2	3818	78 42 18	3837	77 27 54	3856
15	Sun	W.	60 47 12	3378	62 9 54	3386	63 32 27	3393	64 54 51	3400
	Spica	W.	31 12 55	3013	32 42 52	3020	34 12 40	3026	35 42 20	3032
	Venus	W.	25 27 37	3462	26 48 44	3471	28 9 41	3478	29 30 30	3486
	α Aquilæ	E.	71 21 19	3971	70 9 11	3998	68 57 29	4025	67 46 14	4053
	Fomalhaut	E.	97 7 8	3207	95 41 7	3213	94 15 13	3220	92 49 27	3227
16	Sun	W.	71 45 5	3428	73 6 50	3432	74 28 30	3436	75 50 6	3439
	Spica	W.	43 8 58	3057	44 38 0	3060	46 6 58	3065	47 35 51	3067
	Venus	W.	36 12 43	3515	37 32 51	3518	38 52 55	3523	40 12 54	3525
	α Aquilæ	E.	61 57 21	4218	60 49 12	4258	59 41 40	4298	58 34 46	4341
	Fomalhaut	E.	85 42 20	3253	84 17 14	3259	82 52 14	3263	81 27 19	3268
	α Pegasi	E.	106 47 1	3404	105 24 49	3402	104 2 35	3401	102 40 20	3400
17	Sun	W.	82 37 22	3447	83 58 45	3447	85 20 8	3447	86 41 31	3446
	Spica	W.	54 59 38	3074	56 28 19	3074	57 57 0	3073	59 25 42	3073
	Venus	W.	46 52 8	3535	48 11 54	3535	49 31 40	3535	50 51 26	3533
	α Aquilæ	E.	53 10 55	4604	52 8 34	4670	51 7 9	4739	50 6 42	4812
	Fomalhaut	E.	74 24 2	3288	72 59 36	3292	71 35 15	3295	70 10 58	3298
	α Pegasi	E.	95 48 51	3396	94 26 30	3394	93 4 7	3393	91 41 43	3393
18	Sun	W.	93 28 55	3433	94 50 34	3430	96 12 17	3424	97 34 6	3420
	Spica	W.	66 49 40	3061	68 18 37	3057	69 47 39	3052	71 16 47	3048
	Venus	W.	57 30 47	3520	58 50 49	3516	60 10 55	3511	61 31 7	3506
	Antares	W.	20 55 12	3060	22 24 11	3056	23 53 14	3052	25 22 23	3047
	Fomalhaut	E.	63 10 28	3315	61 46 34	3319	60 22 44	3322	58 58 58	3325
	α Pegasi	E.	84 49 18	3385	83 26 44	3382	82 4 7	3380	80 41 28	3379
19	Sun	W.	104 24 48	3386	105 47 21	3378	107 10 3	3369	108 32 55	3360
	Spica	W.	78 44 4	3017	80 13 56	3009	81 43 57	3001	83 14 8	2993
	Venus	W.	68 13 47	3471	69 34 43	3463	70 55 48	3454	72 17 3	3445
	Antares	W.	32 49 47	3016	34 19 40	3008	35 49 43	3000	37 19 56	2992
	Fomalhaut	E.	52 1 23	3351	50 38 11	3359	49 15 8	3367	47 52 14	3377
	α Pegasi	E.	73 47 41	3369	72 24 49	3368	71 1 56	3366	69 39 1	3365
20	Sun	W.	115 30 0	3308	116 54 2	3297	118 18 17	3284	119 42 47	3272
	Spica	W.	90 47 49	2946	92 19 10	2935	93 50 45	2924	95 22 34	2912
	Venus	W.	79 6 7	3392	80 28 33	3380	81 51 12	3367	83 14 6	3355
	Antares	W.	44 53 47	2944	46 25 10	2933	47 56 47	2922	49 28 38	2910
	Fomalhaut	E.	41 1 7	3454	39 39 51	3476	38 19 0	3503	36 58 39	3535
	α Pegasi	E.	62 44 13	3365	61 21 17	3367	59 58 23	3370	58 35 32	3372
	α Arietis	E.	103 31 1	2993	102 0 40	2981	100 30 4	2970	98 59 14	2958
21	Sun	W.	126 49 1	3205	128 15 4	3192	129 41 23	3177	131 8 0	3163
	Venus	W.	90 12 20	3287	91 36 47	3272	93 1 31	3257	94 26 33	3242
	Antares	W.	57 11 41	2848	58 45 6	2835	60 18 48	2822	61 52 47	2808
	α Pegasi	E.	51 42 41	3410	50 20 36	3423	48 58 45	3438	47 37 12	3456
	α Arietis	E.	91 21 14	2896	89 48 50	2883	88 16 9	2869	86 43 11	2855
	Jupiter	E.	115 32 53	2863	113 59 47	2849	112 26 23	2835	110 52 41	2821

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff.
14	Sun	W.	55° 14′ 45″	3343	56° 38′ 7″	3351	58° 1′ 19″	3361	59° 24′ 20″	3369
	Spica	W.	25 11 37	2984	26 42 10	2990	28 12 35	2998	29 42 50	3006
	α Aquilæ	E.	76 13 50	3878	75 0 8	3900	73 46 48	3922	72 33 51	3947
15	Sun	W.	66 17 8	3407	67 39 17	3413	69 1 19	3418	70 23 15	3422
	Spica	W.	37 11 53	3038	38 41 19	3043	40 10 38	3048	41 39 51	3053
	Venus	W.	30 51 10	3492	32 11 43	3498	33 32 9	3504	34 52 29	3509
	α Aquilæ	E.	66 35 27	4083	65 25 9	4114	64 15 21	4146	63 6 4	4182
	Fomalhaut	E.	91 23 48	3931	89 58 16	3937	88 32 51	3942	87 7 32	3948
16	Sun	W.	77 11 38	3442	78 33 7	3444	79 54 34	3446	81 15 59	3447
	Spica	W.	49 4 41	3069	50 33 28	3071	52 2 13	3073	53 30 56	3073
	Venus	W.	41 32 50	3528	42 52 43	3531	44 12 33	3533	45 32 21	3534
	α Aquilæ	E.	57 28 31	4387	56 22 58	4437	55 18 10	4489	54 14 8	4544
	Fomalhaut	E.	80 2 30	3972	78 37 46	3976	77 13 7	3980	75 48 32	3984
	α Pegasi	E.	101 18 4	3400	99 55 48	3399	98 33 30	3398	97 11 11	3397
17	Sun	W.	88 2 55	3445	89 24 21	3443	90 45 49	3440	92 7 20	3437
	Spica	W.	60 54 25	3071	62 23 10	3069	63 51 57	3067	65 20 47	3065
	Venus	W.	52 11 14	3532	53 31 3	3529	54 50 55	3527	56 10 49	3524
	α Aquilæ	E.	49 7 16	4894	48 8 56	4981	47 11 46	5076	46 15 50	5179
	Fomalhaut	E.	68 46 44	3301	67 22 34	3305	65 58 28	3308	64 34 26	3312
	α Pegasi	E.	90 19 18	3391	88 56 51	3389	87 34 22	3387	86 11 51	3386
18	Sun	W.	98 56 0	3414	100 18 1	3408	101 40 9	3401	103 2 24	3393
	Spica	W.	72 46 0	3043	74 15 20	3037	75 44 47	3031	77 14 21	3024
	Venus	W.	62 51 25	3500	64 11 49	3493	65 32 21	3487	66 53 0	3480
	Antares	W.	26 51 37	3042	28 20 58	3035	29 50 27	3030	31 20 3	3023
	Fomalhaut	E.	57 35 16	3330	56 11 39	3335	54 48 8	3339	53 24 42	3345
	α Pegasi	E.	79 18 47	3377	77 56 4	3374	76 33 18	3373	75 10 31	3371
19	Sun	W.	109 55 57	3351	111 19 10	3340	112 42 35	3331	114 6 11	3319
	Spica	W.	84 44 29	2985	86 15 1	2975	87 45 45	2965	89 16 41	2956
	Venus	W.	73 38 29	3436	75 0 6	3425	76 21 54	3415	77 43 54	3403
	Antares	W.	38 50 19	2983	40 20 53	2973	41 51 39	2964	43 22 37	2954
	Fomalhaut	E.	46 29 31	3388	45 7 1	3400	43 44 45	3415	42 22 46	3433
	α Pegasi	E.	68 16 4	3364	66 53 6	3364	65 30 8	3364	64 7 10	3365
20	Sun	W.	121 7 31	3259	122 32 30	3246	123 57 45	3233	125 23 15	3220
	Spica	W.	96 54 37	2901	98 26 55	2888	99 59 29	2876	101 32 18	2863
	Venus	W.	84 37 14	3342	86 0 37	3329	87 24 15	3316	88 48 9	3300
	Antares	W.	51 0 44	2898	52 33 5	2887	54 5 41	2874	55 38 33	2862
	Fomalhaut	E.	35 38 53	3571	34 19 47	3615	33 1 29	3666	31 44 6	3727
	α Pegasi	E.	57 12 44	3378	55 50 2	3383	54 27 26	3390	53 4 58	3400
	α Arietis	E.	97 28 9	2946	95 56 49	2934	94 25 13	2922	92 53 22	2909
21	Sun	W.	132 34 54	3148	134 2 6	3133	135 29 36	3117	136 57 25	3102
	Venus	W.	95 51 52	3227	97 17 29	3211	98 43 25	3195	100 9 40	3180
	Antares	W.	63 27 4	2795	65 1 39	2781	66 36 32	2766	68 11 44	2753
	α Pegasi	E.	46 15 59	3478	44 55 10	3503	43 34 49	3532	42 15 0	3566
	α Arietis	E.	85 9 55	2842	83 36 22	2828	82 2 31	2815	80 28 22	2801
	Jupiter	E.	109 18 41	2807	107 44 22	2793	106 9 45	2779	104 34 49	2764

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
22	Venus	W.	101° 36′ 13″	3164	103° 3′ 5″	3148	104° 30′ 17″	3132	105° 57′ 48″	3116
	Antares	W.	69 47 14	2738	71 23 3	2723	72 59 12	2708	74 35 41	2694
	α Arietis	E.	78 53 55	2787	77 19 10	2773	75 44 7	2760	74 8 46	2745
	Jupiter	E.	102 59 34	2749	101 23 59	2735	99 48 5	2719	98 11 50	2704
	Aldebaran	E.	109 21 25	2803	107 47 1	2787	106 12 16	2772	104 37 11	2756
23	Antares	W.	82 43 1	2620	84 21 29	2605	86 0 17	2590	87 39 26	2576
	α Aquilæ	W.	44 35 15	4831	45 34 26	4690	46 35 34	4560	47 38 33	4443
	α Arietis	E.	66 7 24	2677	64 30 13	2664	62 52 45	2651	61 14 59	2638
	Jupiter	E.	90 5 38	2629	88 27 23	2614	86 48 47	2600	85 9 52	2586
	Aldebaran	E.	96 36 37	2679	94 59 29	2663	93 22 0	2649	91 44 11	2635
24	Antares	W.	96 0 6	2504	97 41 13	2490	99 22 40	2477	101 4 26	2464
	α Aquilæ	W.	53 17 52	3969	54 30 2	3894	55 43 28	3824	56 58 5	3759
	α Arietis	E.	53 2 0	2580	51 22 38	2570	49 43 2	2561	48 3 13	2552
	Jupiter	E.	76 50 16	2514	75 9 22	2500	73 28 9	2487	71 46 37	2474
	Aldebaran	E.	83 30 14	2564	81 50 29	2551	80 10 26	2538	78 30 5	2525
25	α Aquilæ	W.	63 26 53	3495	64 47 23	3453	66 8 40	3413	67 30 42	3375
	α Arietis	E.	39 41 32	2522	38 0 50	2520	36 20 5	2521	34 39 21	2523
	Jupiter	E.	63 14 29	2412	61 31 12	2401	59 47 39	2390	58 3 50	2380
	Aldebaran	E.	70 4 9	2468	68 22 11	2458	66 39 59	2448	64 57 33	2440
	Pollux	E.	113 39 43	2402	111 56 11	2391	110 12 23	2379	108 28 18	2368
26	α Aquilæ	W.	74 30 32	3229	75 56 7	3205	77 22 10	3184	78 48 38	3167
	Fomalhaut	W.	43 44 24	2743	45 20 7	2709	46 56 35	2678	48 33 44	2650
	Jupiter	E.	49 21 17	2335	47 36 9	2328	45 50 50	2321	44 5 21	2315
	Aldebaran	E.	56 22 31	2405	54 39 3	2399	52 55 27	2396	51 11 46	2393
	Pollux	E.	99 44 6	2318	97 58 33	2310	96 12 48	2301	94 26 50	2294
27	α Aquilæ	W.	86 5 46	3101	87 33 55	3093	89 2 13	3087	90 30 38	3083
	Fomalhaut	W.	56 47 57	2643	58 28 10	2597	60 8 46	2549	61 49 43	2499
	α Pegasi	W.	38 21 17	3183	39 47 47	3110	41 15 44	3047	42 44 59	2989
	Aldebaran	E.	42 32 44	2394	40 49 1	2398	39 5 24	2405	37 21 57	2415
	Pollux	E.	85 34 19	2260	83 47 21	2254	82 0 14	2249	80 13 0	2245
28	Fomalhaut	W.	70 18 30	2450	72 0 53	2443	73 43 26	2438	75 26 7	2433
	α Pegasi	W.	50 26 47	2785	52 1 35	2756	53 37 1	2730	55 13 1	2707
	Pollux	E.	71 15 21	2239	69 27 36	2237	67 39 48	2235	65 51 57	2233
	Regulus	E.	107 55 3	2237	106 7 30	2235	104 19 54	2233	102 32 15	2231
29	Fomalhaut	W.	84 0 50	2422	85 43 54	2421	87 26 59	2422	89 10 3	2423
	α Pegasi	W.	63 19 38	2626	64 57 58	2615	66 36 33	2605	68 15 21	2597
	Pollux	E.	56 52 25	2223	55 4 31	2223	53 16 38	2225	51 28 47	2227
	Regulus	E.	93 33 37	2229	91 45 53	2231	89 58 11	2231	88 10 30	2233
30	Fomalhaut	W.	97 44 36	2439	99 27 15	2445	101 9 46	2450	102 52 9	2457
	α Pegasi	W.	76 31 31	2575	78 11 0	2574	79 50 30	2574	81 30 1	2574
	α Arietis	W.	33 13 1	2389	34 56 51	2380	36 40 55	2372	38 25 10	2366
	Pollux	E.	42 30 18	2239	40 42 48	2242	38 55 23	2246	37 8 4	2249
	Regulus	E.	79 12 49	2245	77 25 29	2248	75 38 13	2251	73 51 2	2256
	Sun	E.	118 19 54	2546	116 39 43	2548	114 59 36	2551	113 19 34	2555

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
22	VENUS	W.	107° 25′ 38″	3100	108° 53′ 48″	3083	110° 22′ 18″	3067	111° 51′ 8″	3050
	Antares	W.	76 12 29	2679	77 49 37	2664	79 27 5	2649	81 4 53	2635
	α Arietis	E.	72 33 6	2732	70 57 8	2717	69 20 51	2704	67 44 17	2690
	JUPITER	E.	96 35 16	2689	94 58 21	2675	93 21 7	2660	91 43 33	2644
	Aldebaran	E.	103 1 45	2741	101 25 59	2725	99 49 52	2710	98 13 25	2694
23	Antares	W.	89 18 54	2561	90 58 42	2547	92 38 50	2533	94 19 18	2518
	α Aquilæ	W.	48 43 16	4332	49 49 39	4231	50 57 36	4137	52 7 2	4050
	α Arietis	E.	59 36 56	2626	57 58 36	2614	56 20 0	2602	54 41 8	2591
	JUPITER	E.	83 30 36	2571	81 51 1	2556	80 11 5	2542	78 30 50	2528
	Aldebaran	E.	90 6 3	2620	88 27 35	2605	86 48 47	2591	85 9 40	2577
24	Antares	W.	102 46 30	2450	104 28 53	2438	106 11 34	2425	107 54 33	2413
	α Aquilæ	W.	58 13 50	3698	59 30 39	3642	60 48 28	3589	62 7 14	3541
	α Arietis	E.	46 23 12	2544	44 43 0	2538	43 2 39	2531	41 22 9	2526
	JUPITER	E.	70 4 47	2461	68 22 39	2448	66 40 13	2436	64 57 30	2424
	Aldebaran	E.	76 49 27	2513	75 8 32	2501	73 27 20	2489	71 45 52	2479
25	α Aquilæ	W.	68 53 27	3341	70 16 51	3310	71 40 51	3280	73 5 26	3253
	α Arietis	E.	32 58 40	2528	31 18 6	2536	29 37 43	2547	27 57 35	2562
	JUPITER	E.	56 19 47	2370	54 35 29	2361	52 50 58	2352	51 6 14	2343
	Aldebaran	E.	63 14 55	2431	61 32 5	2423	59 49 3	2416	58 5 51	2410
	Pollux	E.	106 43 58	2357	104 59 22	2347	103 14 31	2337	101 29 25	2328
26	α Aquilæ	W.	80 15 27	3149	81 42 37	3134	83 10 5	3121	84 37 49	3110
	Fomalhaut	W.	50 11 31	2624	51 49 53	2601	53 28 46	2580	55 8 8	2561
	JUPITER	E.	42 19 43	2309	40 33 57	2304	38 48 4	2300	37 2 5	2297
	Aldebaran	E.	49 28 0	2390	47 44 11	2389	46 0 21	2389	44 16 31	2391
	Pollux	E.	92 40 41	2286	90 54 21	2279	89 7 50	2272	87 21 9	2266
27	α Aquilæ	W.	91 59 8	3081	93 27 41	3080	94 56 15	3082	96 24 47	3085
	Fomalhaut	W.	63 30 58	2487	65 12 30	2476	66 54 17	2467	68 36 17	2458
	α Pegasi	W.	44 15 25	2939	45 46 55	2894	47 19 22	2853	48 52 41	2817
	Aldebaran	E.	35 38 43	2426	33 55 45	2441	32 13 8	2458	30 30 56	2481
	Pollux	E.	78 25 39	2241	76 38 12	2237	74 50 40	2234	73 3 3	2231
28	Fomalhaut	W.	77 8 55	2449	78 51 48	2441	80 34 46	2434	82 17 47	2429
	α Pegasi	W.	56 49 31	2687	58 26 29	2669	60 3 51	2652	61 41 35	2636
	Pollux	E.	64 4 4	2228	62 16 10	2225	60 28 15	2222	58 40 20	2222
	Regulus	E.	100 44 33	2230	98 56 50	2229	97 9 6	2229	95 21 21	2232
29	Fomalhaut	W.	90 53 5	2425	92 36 4	2427	94 19 0	2431	96 1 51	2435
	α Pegasi	W.	69 54 20	2591	71 33 28	2585	73 12 44	2581	74 52 5	2577
	Pollux	E.	49 40 59	2228	47 53 13	2231	46 5 31	2233	44 17 52	2236
	Regulus	E.	86 22 52	2235	84 35 16	2237	82 47 43	2239	81 0 14	2242
30	Fomalhaut	W.	104 34 23	2464	106 16 27	2472	107 58 19	2481	109 39 59	2490
	α Pegasi	W.	83 9 32	2575	84 49 1	2577	86 28 27	2580	88 7 49	2585
	α Arietis	W.	40 9 34	2361	41 54 5	2357	43 38 41	2355	45 23 21	2353
	Pollux	E.	35 20 50	2253	33 33 42	2258	31 46 41	2263	29 59 47	2268
	Regulus	E.	72 3 57	2260	70 16 58	2264	68 30 5	2268	66 43 19	2273
	SUN	E.	111 39 37	2559	109 59 46	2563	108 20 0	2568	106 40 21	2572

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
SUN.	1	12 31 16.09	9.061	S. 3 22 37.8	−58.21	16 1.55	64.39	10 28.30	0.794
Mon.	2	12 34 53.70	9.074	3 45 53.8	58.12	16 1.82	64.44	10 47.19	0.780
Tues.	3	12 38 31.65	9.089	4 9 7.5	58.01	16 2.09	64.48	11 5.75	0.766
Wed.	4	12 42 9.96	9.104	4 32 18.3	−57.89	16 2.37	64.54	11 23.94	0.750
Thur.	5	12 45 48.64	9.120	4 55 26.0	57.75	16 2.64	64.59	11 41.77	0.734
Frid.	6	12 49 27.72	9.137	5 18 30.1	57.59	16 2.91	64.65	11 59.19	0.717
Sat.	7	12 53 7.22	9.154	5 41 30.3	−57.42	16 3.18	64.71	12 16.20	0.700
SUN.	8	12 56 47.14	9.173	6 4 26.2	57.23	16 3.46	64.77	12 32.79	0.682
Mon.	9	13 0 27.51	9.192	6 27 17.4	57.03	16 3.73	64.84	12 48.93	0.663
Tues.	10	13 4 8.34	9.211	6 50 3.5	−56.81	16 4.01	64.90	13 4.61	0.643
Wed.	11	13 7 49 66	9.231	7 12 44.1	56.57	16 4.29	64.98	13 19.80	0.623
Thur.	12	13 11 31.46	9.252	7 35 18.8	56.31	16 4.57	65.05	13 34.51	0.602
Frid.	13	13 15 13.77	9.274	7 57 47.1	−56.04	16 4.85	65.13	13 48.72	0.581
Sat.	14	13 18 56.61	9.296	8 20 8.7	55.75	16 5.13	65.21	14 2.39	0.559
SUN.	15	13 22 39.98	9.319	8 42 23.2	55.45	16 5.41	65.29	14 15.54	0.536
Mon.	16	13 26 23.92	9.343	9 4 30.1	−55.12	16 5.69	65.37	14 28.12	0.512
Tues.	17	13 30 8.43	9.367	9 26 29.2	54.79	16 5.96	65.46	14 40.14	0.489
Wed.	18	13 33 53.52	9.392	9 48 19.9	54.43	16 6.24	65.55	14 51.57	0.464
Thur.	19	13 37 39.22	9.417	10 10 2.0	−54.06	16 6.52	65.64	15 2.39	0.439
Frid.	20	13 41 25.52	9.444	10 31 34.9	53.68	16 6.79	65.74	15 12.62	0.412
Sat.	21	13 45 12.49	9.471	10 52 58.5	53.28	16 7.07	65.83	15 22.17	0.385
SUN.	22	13 49 0.10	9.498	11 14 12.2	−52.86	16 7.34	65.93	15 31.10	0.358
Mon.	23	13 52 48.39	9.527	11 35 15.7	52.42	16 7.61	66.03	15 39.34	0.329
Tues.	24	13 56 37.36	9.556	11 56 8.6	51.98	16 7.87	66.13	15 46.90	0.300
Wed.	25	14 0 27.06	9.586	12 16 50.7	−51.52	16 8.14	66.23	15 53.74	0.270
Thur.	26	14 4 17.47	9.616	12 37 21.4	51.04	16 8.40	66.34	15 59.87	0.240
Frid.	27	14 8 8.64	9.648	12 57 40.5	50.54	16 8.65	66.45	16 5.24	0.208
Sat.	28	14 12 0.57	9.680	13 17 47.5	−50.03	16 8.91	66.55	16 9.86	0.176
SUN.	29	14 15 53.27	9.712	13 37 42.1	49.51	16 9.16	66.66	16 13.70	0.144
Mon.	30	14 19 46.75	9.745	13 57 23.8	48.96	16 9.41	66.78	16 16.76	0.110
Tues.	31	14 23 41.06	9.780	14 16 52.3	48.40	16 9.65	66.89	16 19.00	0.077
Wed.	32	14 27 36.17	9.813	S. 14 36 7.2	−47.83	16 9.86	67.00	16 20.45	0.043

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^{s}.18$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
SUN.	1	12 31 17.67	9.063	S. 3 22 47.9	−58.22	10 28.44	0.794	12 41 46.11
Mon.	2	12 34 55.33	9.076	3 46 4.3	58.13	10 47.33	0.780	12 45 42.66
Tues.	3	12 38 33.33	9.091	4 9 18.2	58.02	11 5.89	0.766	12 49 39.22
Wed.	4	12 42 11.69	9.106	4 32 29.3	−57.90	11 24.08	0.750	12 53 35.77
Thur.	5	12 45 50.42	9.122	4 55 37.2	57.76	11 41.91	0.734	12 57 32.33
Frid.	6	12 49 29.55	9.139	5 18 41.6	57.60	11 59.33	0.717	13 1 28.88
Sat.	7	12 53 9.09	9.156	5 41 42.0	−57.43	12 16.34	0.700	13 5 25.43
SUN.	8	12 56 49.06	9.175	6 4 38.2	57.24	12 32.93	0.682	13 9 21.99
Mon.	9	13 0 29.47	9.194	6 27 29.6	57.03	12 49.07	0.663	13 13 18.54
Tues.	10	13 4 10.35	9.213	6 50 15.8	−56.81	13 4.75	0.643	13 17 15.10
Wed.	11	13 7 51.71	9.233	7 12 56.6	56.58	13 19.94	0.623	13 21 11.65
Thur.	12	13 11 33.55	9.254	7 35 31.5	56.32	13 34.65	0.602	13 25 8.20
Frid.	13	13 15 15.91	9.276	7 58 0.0	−56.05	13 48.85	0.581	13 29 4.76
Sat.	14	13 18 58.79	9.298	8 20 21.7	55.76	14 2.52	0.559	13 33 1.31
SUN.	15	13 22 42.20	9.321	8 42 36.3	55.45	14 15.67	0.536	13 36 57.87
Mon.	16	13 26 26.18	9.344	9 4 43.4	−55.13	14 28.24	0.512	13 40 54.42
Tues.	17	13 30 10.72	9.368	9 26 42.6	54.79	14 40.26	0.488	13 44 50.98
Wed.	18	13 33 55.85	9.393	9 48 33.4	54.44	14 51.68	0.463	13 48 47.53
Thur.	19	13 37 41.58	9.418	10 10 15.5	−54.06	15 2.50	0.438	13 52 44.08
Frid.	20	13 41 27.92	9.445	10 31 48.5	53.68	15 12.72	0.412	13 56 40.64
Sat.	21	13 45 14.92	9.472	10 53 12.1	53.28	15 22.27	0.385	14 0 37.19
SUN.	22	13 49 2.56	9.499	11 14 25.8	−52.86	15 31.19	0.357	14 4 33.75
Mon.	23	13 52 50.88	9.528	11 35 29.4	52.43	15 39.42	0.329	14 8 30.30
Tues.	24	13 56 39.88	9.557	11 56 22.3	51.98	15 46.98	0.300	14 12 26.86
Wed.	25	14 0 29.60	9.587	12 17 4.3	−51.51	15 53.81	0.270	14 16 23.41
Thur.	26	14 4 20.04	9.617	12 37 35.0	51.04	15 59.93	0.239	14 20 19.97
Frid.	27	14 8 11.23	9.649	12 57 54.0	50.54	16 5.29	0.208	14 24 16.52
Sat.	28	14 12 3.18	9.681	13 18 1.0	−50.03	16 9.90	0.176	14 28 13.08
SUN.	29	14 15 55.90	9.713	13 37 55.4	49.50	16 13.74	0.144	14 32 9.64
Mon.	30	14 19 49.40	9.746	13 57 37.1	48.96	16 16.79	0.110	14 36 6.19
Tues.	31	14 23 43.72	9.780	14 17 5.4	48.40	16 19.02	0.076	14 40 2.74
Wed.	32	14 27 38.84	9.814	S. 14 36 20.2	−47.82	16 20.46	0.043	14 43 59.30

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour,
+9ˢ.8565.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	λ'	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
1	274	188° 31′ 26″.5	30′ 54″.9	147″.67	+ 0″.46	0.0002023	−51.0	11ʰ 16ᵐ 22ˢ.78
2	275	189 30 31.7	30 0.0	147.76	0.51	0.0000799	51.0	11 12 26.87
3	276	190 29 39.2	29 7.4	147.86	0.53	9.9999575	51.0	11 8 30.96
4	277	191 28 49.0	28 17.1	147.96	+ 0.51	9.9998351	−51.1	11 4 35.06
5	278	192 28 1.1	27 29.1	148.05	0.46	9.9997124	51.2	11 0 39.14
6	279	193 27 15.6	26 43.5	148.15	0.39	9.9995893	51.4	10 56 43.24
7	280	194 26 32.4	26 0.1	148.25	+ 0.29	9.9994659	−51.5	10 52 47.32
8	281	195 25 51.4	25 19.0	148.34	0.17	9.9993421	51.7	10 48 51.42
9	282	196 25 12.5	24 40.0	148.42	+ 0.03	9.9992179	51.8	10 44 55.51
10	283	197 24 35.7	24 3.1	148.51	− 0.10	9.9990933	−52.0	10 40 59.60
11	284	198 24 1.0	23 28.3	148.60	0.23	9.9989682	52.2	10 37 3.70
12	285	199 23 28.3	22 55.5	148.68	0.36	9.9988428	52.3	10 33 7.79
13	286	200 22 57.5	22 24.5	148.76	− 0.47	9.9987171	−52.4	10 29 11.88
14	287	201 22 28.5	21 55.4	148.83	0.56	9.9985912	52.5	10 25 15.97
15	288	202 22 1.3	21 28.1	148.90	0.62	9.9984653	52.4	10 21 20.06
16	289	203 21 35.9	21 2.6	148.98	− 0.65	9.9983395	−52.4	10 17 24.16
17	290	204 21 12.3	20 38.9	149.05	0.66	9.9982140	52.2	10 13 28.24
18	291	205 20 50.4	20 16.8	149.12	0.64	9.9980890	52.0	10 9 32.34
19	292	206 20 30.2	19 56.5	149.20	− 0.58	9.9979646	−51.7	10 5 36.43
20	293	207 20 11.8	19 38.0	149.27	0.50	9.9978409	51.4	10 1 40.52
21	294	208 19 55.2	19 21.2	149.34	0.40	9.9977181	50.9	9 57 44.62
22	295	209 19 40.3	19 6.2	149.42	− 0.28	9.9975964	−50.4	9 53 48.70
23	296	210 19 27.2	18 53.0	149.49	0.15	9.9974760	49.9	9 49 52.80
24	297	211 19 16.0	18 41.6	149.57	− 0.02	9.9973568	49.4	9 45 56.88
25	298	212 19 6.7	18 32.2	149.65	+ 0.10	9.9972389	−48.9	9 42 0.98
26	299	213 18 59.4	18 24.8	149.74	0.21	9.9971223	48.3	9 38 5.07
27	300	214 18 54.1	18 19.4	149.82	0.31	9.9970070	47.7	9 34 9.16
28	301	215 18 50.8	18 15.9	149.92	+ 0.39	9.9968932	−47.1	9 30 13.25
29	302	216 18 49.6	18 14.6	149.99	0.43	9.9967808	46.6	9 26 17.33
30	303	217 18 50.5	18 15.3	150.08	0.44	9.9966697	46.1	9 22 21.43
31	304	218 18 53.6	18 18.3	150.19	0.42	9.9965597	45.6	9 18 25.52
32	305	219 18 58.9	18 23.5	150.26	+ 0.38	9.9964508	−45.2	9 14 29.61

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ' to the mean equinox of January 0ᵈ.0.

Diff. for 1 Hour,
— 9ˢ.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 13.5	16 11.5	59 26.1	−0.55	59 18.8	−0.66	17 32.9	2.63	21.2
2	16 9.1	16 6.5	59 10.2	0.76	59 0.6	0.83	18 35.1	2.54	22.2
3	16 3.7	16 0.7	58 50.3	0.90	58 39.1	0.96	19 34.3	2.37	23.2
4	15 57.4	15 54.1	58 27.3	−1.00	58 15.0	−1.05	20 28.7	2.18	24.2
5	15 50.6	15 47.0	58 2.2	1.09	57 48.9	1.13	21 18.8	2.00	25.2
6	15 43.2	15 39.4	57 35.1	1.17	57 20.9	1.20	22 5.4	1.88	26.2
7	15 35.4	15 31.4	57 6.4	−1.23	56 51.5	−1.25	22 49.5	1.80	27.2
8	15 27.3	15 23.1	56 36.4	1.27	56 21.1	1.28	23 32.2	1.77	28.2
9	15 18.9	15 14.8	56 5.8	1.27	55 50.6	1.25	δ		29.2
10	15 10.8	15 6.8	55 35.8	−1.22	55 21.4	−1.18	0 14.8	1.79	0.6
11	15 3.1	14 59.6	55 7.6	1.11	54 54.8	1.02	0 58.3	1.84	1.6
12	14 56.4	14 53.6	54 43.1	0.92	54 32.7	0.80	1 43.2	1.92	2.6
13	14 51.1	14 49.2	54 23.8	−0.67	54 16.7	−0.51	2 30.5	2.01	3.6
14	14 47.8	14 47.0	54 11.6	−0.34	54 8.5	−0.16	3 19.8	2.09	4.6
15	14 46.8	14 47.2	54 7.7	+0.03	54 9.3	+0.24	4 10.7	2.14	5.6
16	14 48.3	14 50.1	54 13.4	+0.45	54 20.1	+0.66	5 2.2	2.15	6.6
17	14 52.6	14 55.9	54 29.3	0.88	54 41.2	1.10	5 53.4	2.11	7.6
18	14 59.8	15 4.4	54 55.6	1.30	55 12.4	1.50	6 43.4	2.05	8.6
19	15 9.6	15 15.4	55 31.5	+1.68	55 52.7	+1.85	7 31.6	1.98	9.6
20	15 21.6	15 28.3	56 15.8	1.98	56 40.3	2.09	8 18.4	1.92	10.6
21	15 35.3	15 42.4	57 6.0	2.16	57 32.2	2.20	9 4.1	1.89	11.6
22	15 49.7	15 56.7	57 58.7	+2.19	58 24.7	+2.13	9 49.8	1.91	12.6
23	16 3.5	16 9.9	58 49.7	2.02	59 13.1	1.86	10 36,6	1.99	13.6
24	16 15.7	16 20.8	59 34.4	1.66	59 52.9	1.41	11 26.0	2.12	14.6
25	16 24.9	16 28.1	60 8.2	+1.12	60 19.8	+0.82	12 18.8	2.30	15.6
26	16 30.3	16 31.4	60 27.9	+0.51	60 32.0	+0.18	13 16.4	2.50	16.6
27	16 31.5	16 30.5	60 32.2	−0.14	60 28.7	−0.44	14 18.5	2.66	17.6
28	16 28.6	16 25.9	60 21.7	−0.71	60 11.7	−0.95	15 23.4	2.72	18.6
29	16 22.4	16 18.4	59 59.0	1.15	59 44.1	1.31	16 27.9	2.64	19.6
30	16 13.8	16 9.0	59 27.5	1.43	59 9.7	1.52	17 29.2	2.46	20.6
31	16 3.9	15 58.7	58 51.0	1.58	58 31.8	1.60	18 25.5	2.24	21.6
32	15 53.4	15 48.2	58 12 5	−1.60	57 53.2	−1.58	19 16.7	2.04	22.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 1.					**TUESDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 30 24.88	2.6787	N.28 1 17.0	3.278	0	7 37 53.80	2.5713	N.26 53 43.4	5.893
1	5 33 5.66	2.6804	28 4 27.8	3.082	1	7 40 27.91	2.5656	26 47 44.7	6.064
2	5 35 46.53	2.6819	28 7 26.8	2.885	2	7 43 1.68	2.5598	26 41 35.7	6.234
3	5 38 27.49	2.6832	28 10 14.0	2.688	3	7 45 35.09	2.5538	26 35 16.6	6.403
4	5 41 8.52	2.6844	28 12 49.3	2.490	4	7 48 8.14	2.5478	26 28 47.4	6.570
5	5 43 49.62	2.6855	28 15 12.8	2.293	5	7 50 40.83	2.5417	26 22 8.2	6.735
6	5 46 30.78	2.6863	28 17 24.5	2.096	6	7 53 13.14	2.5354	26 15 19.2	6.898
7	5 49 11.98	2.6870	28 19 24.3	1.898	7	7 55 45.08	2.5291	26 8 20.4	7.061
8	5 51 53.22	2.6875	28 21 12.2	1.699	8	7 58 16.64	2.5227	26 1 11.8	7.224
9	5 54 34.48	2.6878	28 22 48.2	1.501	9	8 0 47.81	2.5163	25 53 53.5	7.384
10	5 57 15.75	2.6879	28 24 12.3	1.302	10	8 3 18.59	2.5098	25 46 25.7	7.542
11	5 59 57.03	2.6879	28 25 24.5	1.104	11	8 5 48.98	2.5033	25 38 48.4	7.699
12	6 2 38.30	2.6877	28 26 24.8	0.906	12	8 8 18.98	2.4967	25 31 1.8	7.854
13	6 5 19.55	2.6873	28 27 13.2	0.707	13	8 10 48.58	2.4899	25 23 5.9	8.008
14	6 8 0.78	2.6867	28 27 49.7	0.509	14	8 13 17.77	2.4830	25 15 0.8	8.161
15	6 10 41.96	2.6859	28 28 14.3	0.312	15	8 15 46.54	2.4761	25 6 46.6	8.312
16	6 13 23.09	2.6851	28 28 27.1	+ 0.114	16	8 18 14.90	2.4692	24 58 23.4	8.461
17	6 16 4.17	2.6841	28 28 28.0	− 0.084	17	8 20 42.85	2.4624	24 49 51.3	8.609
18	6 18 45.18	2.6828	28 28 17.0	0.282	18	8 23 10.39	2.4555	24 41 10.3	8.756
19	6 21 26.11	2.6813	28 27 54.2	0.479	19	8 25 37.51	2.4484	24 32 20.6	8.900
20	6 24 6.94	2.6797	28 27 19.6	0.676	20	8 28 4.20	2.4413	24 23 22.3	9.042
21	6 26 47.67	2.6779	28 26 33.1	0.872	21	8 30 30.47	2.4342	24 14 15.5	9.183
22	6 29 28.29	2.6760	28 25 34.9	1.068	22	8 32 56.31	2.4271	24 5 0.3	9.323
23	6 32 8.79	2.6739	N.28 24 25.0	1.263	23	8 35 21.72	2.4200	N.23 55 36.8	9.461
	MONDAY 2.					**WEDNESDAY 4.**			
0	6 34 49.16	2.6716	N.28 23 3.3	1.459	0	8 37 46.71	2.4128	N.23 46 5.0	9.598
1	6 37 29.38	2.6691	28 21 29.9	1.653	1	8 40 11.26	2.4056	23 36 25.0	9.733
2	6 40 9.45	2.6665	28 19 44.9	1.847	2	8 42 35.38	2.3984	23 26 37.0	9.866
3	6 42 49.36	2.6637	28 17 48.3	2.040	3	8 44 59.07	2.3912	23 16 41.1	9.997
4	6 45 29.10	2.6607	28 15 40.1	2.232	4	8 47 22.33	2.3840	23 6 37.3	10.127
5	6 48 8.65	2.6576	28 13 20.4	2.424	5	8 49 45.15	2.3767	22 56 25.8	10.255
6	6 50 48.01	2.6543	28 10 49.2	2.616	6	8 52 7.54	2.3695	22 46 6.7	10.382
7	6 53 27.17	2.6510	28 8 6.6	2.806	7	8 54 29.49	2.3623	22 35 40.0	10.507
8	6 56 6.13	2.6474	28 5 12.5	2.996	8	8 56 51.01	2.3551	22 25 5.9	10.630
9	6 58 44.86	2.6436	28 2 7.1	3.184	9	8 59 12.10	2.3478	22 14 24.4	10.752
10	7 1 23.36	2.6397	27 58 50.4	3.372	10	9 1 32.75	2.3405	22 3 35.7	10.872
11	7 4 1.63	2.6357	27 55 22.4	3.559	11	9 3 52.96	2.3333	21 52 39.8	10.990
12	7 6 39.65	2.6316	27 51 43.3	3.745	12	9 6 12.74	2.3261	21 41 36.9	11.107
13	7 9 17.42	2.6273	27 47 53.0	3.931	13	9 8 32.09	2.3188	21 30 27.0	11.222
14	7 11 54.92	2.6228	27 43 51.6	4.114	14	9 10 51.00	2.3116	21 19 10.3	11.334
15	7 14 32.15	2.6183	27 39 39.3	4.297	15	9 13 9.48	2.3044	21 7 46.9	11.446
16	7 17 9.11	2.6136	27 35 16.0	4.479	16	9 15 27.53	2.2973	20 56 16.8	11.556
17	7 19 45.78	2.6087	27 30 41.8	4.660	17	9 17 45.16	2.2902	20 44 40.2	11.664
18	7 22 22.15	2.6037	27 25 56.8	4.840	18	9 20 2.36	2.2832	20 32 57.1	11.771
19	7 24 58.22	2.5986	27 21 1.0	5.019	19	9 22 19.14	2.2761	20 21 7.7	11.876
20	7 27 33.98	2.5934	27 15 54.5	5.196	20	9 24 35.49	2.2689	20 9 12.0	11.980
21	7 30 9.43	2.5882	27 10 37.5	5.372	21	9 26 51.41	2.2618	19 57 10.1	12.082
22	7 32 44.56	2.5827	27 5 9.9	5.547	22	9 29 6.91	2.2549	19 45 2.2	12.181
23	7 35 19.35	2.5770	26 59 31.8	5.721	23	9 31 22.00	2.2480	19 32 48.4	12.279
24	7 37 53.80	2.5713	N.26 53 43.4	5.893	24	9 33 36.67	2.2410	N.19 20 28.7	12.377

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 33 36.67	2.2410	N.19 20 28.7	12.377
1	9 35 50.92	2.2342	19 8 3.2	12.472
2	9 38 4.77	2.2274	18 55 32.1	12.565
3	9 40 18.21	2.2206	18 42 55.4	12.657
4	9 42 31.24	2.2138	18 30 13.3	12.747
5	9 44 43.87	2.2071	18 17 25.8	12.836
6	9 46 56.09	2.2004	18 4 33.0	12.923
7	9 49 7.92	2.1938	17 51 35.0	13.008
8	9 51 19.35	2.1872	17 38 32.0	13.092
9	9 53 30.39	2.1807	17 25 24.0	13.174
10	9 55 41.04	2.1743	17 12 11.1	13.255
11	9 57 51.31	2.1679	16 58 53.4	13.334
12	10 0 1.19	2.1615	16 45 31.0	13.412
13	10 2 10.69	2.1553	16 32 4.0	13.488
14	10 4 19.82	2.1491	16 18 32.5	13.562
15	10 6 28.58	2.1429	16 4 56.6	13.635
16	10 8 36.97	2.1368	15 51 16.3	13.707
17	10 10 44.99	2.1307	15 37 31.8	13.777
18	10 12 52.65	2.1247	15 23 43.1	13.845
19	10 14 59.96	2.1188	15 9 50.4	13.912
20	10 17 6.91	2.1129	14 55 53.7	13.977
21	10 19 13.51	2.1072	14 41 53.1	14.041
22	10 21 19.77	2.1015	14 27 48.8	14.103
23	10 23 25.69	2.0958	N.14 13 40.8	14.164

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 25 31.26	2.0901	N.13 59 29.1	14.224
1	10 27 36.50	2.0846	13 45 13.9	14.282
2	10 29 41.42	2.0792	13 30 55.3	14.338
3	10 31 46.01	2.0738	13 16 33.4	14.393
4	10 33 50.28	2.0686	13 2 8.2	14.447
5	10 35 54.24	2.0633	12 47 39.8	14.498
6	10 37 57.88	2.0581	12 33 8.4	14.548
7	10 40 1.21	2.0530	12 18 34.0	14.596
8	10 42 4.24	2.0480	12 3 56.6	14.647
9	10 44 6.97	2.0430	11 49 16.4	14.693
10	10 46 9.40	2.0382	11 34 33.5	14.738
11	10 48 11.55	2.0334	11 19 47.9	14.782
12	10 50 13.41	2.0287	11 4 59.7	14.824
13	10 52 14.99	2.0240	10 50 9.0	14.865
14	10 54 16.29	2.0194	10 35 15.9	14.905
15	10 56 17.32	2.0149	10 20 20.4	14.943
16	10 58 18.08	2.0105	10 5 22.7	14.979
17	11 0 18.58	2.0062	9 50 22.9	15.015
18	11 2 18.82	2.0019	9 35 20.9	15.050
19	11 4 18.81	1.9977	9 20 16.9	15.082
20	11 6 18.55	1.9936	9 5 11.0	15.113
21	11 8 18.04	1.9895	8 50 3.3	15.143
22	11 10 17.29	1.9856	8 34 53.8	15.173
23	11 12 16.31	1.9817	8 19 42.5	15.202
24	11 14 15.10	1.9779	N. 8 4 29.6	15.228

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 14 15.10	1.9779	N. 8 4 29.6	15.228
1	11 16 13.66	1.9742	7 49 15.2	15.253
2	11 18 12.00	1.9705	7 33 59.3	15.277
3	11 20 10.12	1.9669	7 18 42.0	15.299
4	11 22 8.03	1.9634	7 3 23.4	15.321
5	11 24 5.73	1.9600	6 48 3.5	15.341
6	11 26 3.23	1.9567	6 32 42.5	15.359
7	11 28 0.53	1.9534	6 17 20.4	15.377
8	11 29 57.64	1.9502	6 1 57.3	15.393
9	11 31 54.56	1.9471	5 46 33.2	15.409
10	11 33 51.29	1.9441	5 31 8.2	15.423
11	11 35 47.85	1.9412	5 15 42.4	15.435
12	11 37 44.23	1.9383	5 0 16.0	15.446
13	11 39 40.44	1.9355	4 44 48.9	15.457
14	11 41 36.49	1.9328	4 29 21.2	15.467
15	11 43 32.38	1.9302	4 13 52.9	15.475
16	11 45 28.11	1.9275	3 58 24.2	15.482
17	11 47 23.68	1.9249	3 42 55.1	15.487
18	11 49 19.10	1.9225	3 27 25.8	15.491
19	11 51 14.38	1.9202	3 11 56.2	15.495
20	11 53 9.53	1.9180	2 56 26.4	15.497
21	11 55 4.54	1.9158	2 40 56.6	15.497
22	11 56 59.43	1.9137	2 25 26.8	15.497
23	11 58 54.19	1.9117	N. 2 9 56.9	15.497

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 0 48.83	1.9097	N. 1 54 27.1	15.496
1	12 2 43.35	1.9078	1 38 57.5	15.491
2	12 4 37.77	1.9061	1 23 28.2	15.486
3	12 6 32.08	1.9043	1 7 59.2	15.480
4	12 8 26.29	1.9027	0 52 30.6	15.473
5	12 10 20.40	1.9011	0 37 2.4	15.466
6	12 12 14.42	1.8996	0 21 34.7	15.457
7	12 14 8.35	1.8982	N. 0 6 7.6	15.447
8	12 16 2.20	1.8968	S. 0 9 18.9	15.436
9	12 17 55.97	1.8955	0 24 44.7	15.423
10	12 19 49.66	1.8943	0 40 9.7	15.410
11	12 21 43.29	1.8932	0 55 33.9	15.396
12	12 23 36.85	1.8922	1 10 57.2	15.380
13	12 25 30.35	1.8912	1 26 19.5	15.363
14	12 27 23.79	1.8903	1 41 40.8	15.346
15	12 29 17.18	1.8894	1 57 1.0	15.327
16	12 31 10.52	1.8886	2 12 20.1	15.306
17	12 33 3.82	1.8879	2 27 38.0	15.287
18	12 34 57.07	1.8872	2 42 54.6	15.266
19	12 36 50.29	1.8867	2 58 9.9	15.243
20	12 38 43.48	1.8862	3 13 23.8	15.219
21	12 40 36.64	1.8858	3 28 36.2	15.194
22	12 42 29.78	1.8855	3 43 47.1	15.168
23	12 44 22.90	1.8852	3 58 56.4	15.142
24	12 46 16.00	1.8849	S. 4 14 4.1	15.114

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 46 16.00	1.8849	S. 4 14 4.1	15.114
1	12 48 9.09	1.8848	4 29 10.1	15.085
2	12 50 2.18	1.8848	4 44 14.3	15.055
3	12 51 55.27	1.8848	4 59 16.7	15.024
4	12 53 48.36	1.8848	5 14 17.2	14.992
5	12 55 41.45	1.8849	5 29 15.8	14.960
6	12 57 34.55	1.8851	5 44 12.4	14.926
7	12 59 27.66	1.8854	5 59 6.9	14.891
8	13 1 20.79	1.8858	6 13 59.3	14.855
9	13 3 13.95	1.8863	6 28 49.5	14.818
10	13 5 7.14	1.8867	6 43 37.5	14.781
11	13 7 0.35	1.8871	6 58 23.2	14.742
12	13 8 53.59	1.8877	7 13 6.6	14.703
13	13 10 46.87	1.8884	7 27 47.6	14.662
14	13 12 40.20	1.8892	7 42 26.1	14.620
15	13 14 33.57	1.8899	7 57 2.0	14.577
16	13 16 26.99	1.8907	8 11 35.3	14.534
17	13 18 20.46	1.8916	8 26 6.0	14.490
18	13 20 13.98	1.8926	8 40 34.1	14.445
19	13 22 7.57	1.8937	8 54 59.4	14.398
20	13 24 1.22	1.8947	9 9 21.9	14.351
21	13 25 54.93	1.8958	9 23 41.5	14.302
22	13 27 48.71	1.8970	9 37 58.2	14.253
23	13 29 42.57	1.8983	S. 9 52 11.9	14.203

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 31 36.51	1.8997	S. 10 6 22.6	14.153
1	13 33 30.53	1.9010	10 20 30.2	14.101
2	13 35 24.63	1.9024	10 34 34.7	14.047
3	13 37 18.82	1.9039	10 48 35.9	13.993
4	13 39 13.10	1.9055	11 2 33.9	13.939
5	13 41 7.48	1.9071	11 16 28.6	13.883
6	13 43 1.95	1.9088	11 30 19.9	13.827
7	13 44 56.53	1.9105	11 44 7.8	13.769
8	13 46 51.21	1.9123	11 57 52.2	13.711
9	13 48 46.00	1.9141	12 11 33.1	13.652
10	13 50 40.90	1.9159	12 25 10.4	13.592
11	13 52 35.91	1.9178	12 38 44.1	13.531
12	13 54 31.04	1.9198	12 52 14.1	13.469
13	13 56 26.29	1.9219	13 5 40.3	13.406
14	13 58 21.67	1.9240	13 19 2.8	13.342
15	14 0 17.17	1.9261	13 32 21.4	13.277
16	14 2 12.80	1.9283	13 45 36.1	13.212
17	14 4 8.56	1.9305	13 58 46.8	13.145
18	14 6 4.46	1.9328	14 11 53.5	13.078
19	14 8 0.49	1.9351	14 24 56.1	13.010
20	14 9 56.67	1.9375	14 37 54.7	12.942
21	14 11 52.99	1.9399	14 50 49.1	12.871
22	14 13 49.46	1.9423	15 3 39.2	12.800
23	14 15 46.07	1.9447	15 16 25.1	12.729
24	14 17 42.83	1.9473	S. 15 29 6.7	12.657

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 17 42.83	1.9473	S. 15 29 6.7	12.657
1	14 19 39.75	1.9500	15 41 43.9	12.583
2	14 21 36.83	1.9526	15 54 16.6	12.508
3	14 23 34.06	1.9552	16 6 44.9	12.433
4	14 25 31.45	1.9579	16 19 8.6	12.357
5	14 27 29.01	1.9607	16 31 27.7	12.280
6	14 29 26.74	1.9635	16 43 42.2	12.202
7	14 31 24.63	1.9663	16 55 52.0	12.123
8	14 33 22.69	1.9692	17 7 57.0	12.044
9	14 35 20.93	1.9721	17 19 57.3	11.964
10	14 37 19.34	1.9749	17 31 52.7	11.882
11	14 39 17.92	1.9778	17 43 43.2	11.800
12	14 41 16.68	1.9808	17 55 28.7	11.717
13	14 43 15.62	1.9838	18 7 9.2	11.633
14	14 45 14.74	1.9869	18 18 44.7	11.549
15	14 47 14.05	1.9900	18 30 15.1	11.464
16	14 49 13.54	1.9931	18 41 40.4	11.378
17	14 51 13.22	1.9962	18 53 0.5	11.291
18	14 53 13.09	1.9994	19 4 15.3	11.203
19	14 55 13.15	2.0026	19 15 24.8	11.114
20	14 57 13.40	2.0058	19 26 29.0	11.025
21	14 59 13.84	2.0090	19 37 27.8	10.935
22	15 1 14.48	2.0122	19 48 21.2	10.843
23	15 3 15.31	2.0155	S. 19 59 9.0	10.751

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 5 16.34	2.0188	S. 20 9 51.3	10.658
1	15 7 17.57	2.0221	20 20 28.0	10.565
2	15 9 19.00	2.0254	20 30 59.1	10.471
3	15 11 20.62	2.0288	20 41 24.5	10.376
4	15 13 22.45	2.0322	20 51 44.2	10.280
5	15 15 24.48	2.0356	21 1 58.1	10.183
6	15 17 26.72	2.0390	21 12 6.2	10.086
7	15 19 29.16	2.0424	21 22 8.4	9.987
8	15 21 31.81	2.0458	21 32 4.7	9.888
9	15 23 34.66	2.0492	21 41 55.0	9.788
10	15 25 37.71	2.0526	21 51 39.3	9.687
11	15 27 40.97	2.0561	22 1 17.5	9.586
12	15 29 44.44	2.0595	22 10 49.6	9.484
13	15 31 48.11	2.0629	22 20 15.5	9.381
14	15 33 51.99	2.0664	22 29 35.3	9.278
15	15 35 56.08	2.0699	22 38 48.9	9.174
16	15 38 0.38	2.0733	22 47 56.2	9.068
17	15 40 4.88	2.0767	22 56 57.1	8.962
18	15 42 9.59	2.0802	23 5 51.7	8.856
19	15 44 14.51	2.0837	23 14 39.8	8.748
20	15 46 19.63	2.0871	23 23 21.5	8.641
21	15 48 24.96	2.0906	23 31 56.7	8.532
22	15 50 30.50	2.0940	23 40 25.3	8.422
23	15 52 36.24	2.0974	23 48 47.3	8.312
24	15 54 42.19	2.1008	S. 23 57 2.7	8.201

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 13.					**SUNDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 54 42.19	2.1008	S.23 57 2.7	8.201	0	17 38 57.94	2.2273	S.28 11 18.0	2.199
1	15 56 48.34	2.1043	24 5 11.4	8.089	1	17 41 11.62	2.2287	28 13 25.9	2.063
2	15 58 54.70	2.1077	24 13 13.4	7.977	2	17 43 25.38	2.2299	28 15 25.6	1.927
3	16 1 1.26	2.1110	24 21 8.6	7.864	3	17 45 39.21	2.2311	28 17 17.1	1.791
4	16 3 8.02	2.1143	24 28 57.1	7.751	4	17 47 53.11	2.2323	28 19 0.5	1.655
5	16 5 14.98	2.1177	24 36 38.7	7.636	5	17 50 7.08	2.2334	28 20 35.7	1.519
6	16 7 22.14	2.1210	24 44 13.4	7.521	6	17 52 21.12	2.2345	28 22 2.8	1.383
7	16 9 29.50	2.1243	24 51 41.2	7.406	7	17 54 35.22	2.2354	28 23 21.7	1.246
8	16 11 37.06	2.1276	24 59 2.1	7.290	8	17 56 49.37	2.2363	28 24 32.4	1.109
9	16 13 44.82	2.1309	25 6 16.0	7.172	9	17 59 3.57	2.2371	28 25 34.8	0.972
10	16 15 52.77	2.1341	25 13 22.8	7.054	10	18 1 17.82	2.2379	28 26 29.0	0.835
11	16 18 0.91	2.1374	25 20 22.5	6.936	11	18 3 32.12	2.2387	28 27 15.0	0.698
12	16 20 9.25	2.1406	25 27 15.1	6.817	12	18 5 46.46	2.2393	28 27 52.7	0.560
13	16 22 17.78	2.1437	25 34 0.6	6.698	13	18 8 0.83	2.2398	28 28 22.2	0.423
14	16 24 26.49	2.1467	25 40 38.9	6.578	14	18 10 15.23	2.2403	28 28 43.4	0.285
15	16 26 35.39	2.1498	25 47 9.9	6.457	15	18 12 29.66	2.2407	28 28 56.4	0.148
16	16 28 44.47	2.1529	25 53 33.7	6.336	16	18 14 44.11	2.2410	28 29 1.1	− 0.010
17	16 30 53.74	2.1561	25 59 50.2	6.215	17	18 16 58.58	2.2412	28 28 57.6	+ 0.128
18	16 33 3.20	2.1591	26 5 59.5	6.093	18	18 19 13.06	2.2414	28 28 45.8	0.266
19	16 35 12.83	2.1620	26 12 1.4	5.969	19	18 21 27.55	2.2416	28 28 25.7	0.404
20	16 37 22.64	2.1649	26 17 55.8	5.845	20	18 23 42.05	2.2417	28 27 57.3	0.542
21	16 39 32.62	2.1677	26 23 42.8	5.721	21	18 25 56.55	2.2416	28 27 20.7	0.679
22	16 41 42.78	2.1706	26 29 22.4	5.597	22	18 28 11.04	2.2415	28 26 35.8	0.817
23	16 43 53.10	2.1734	S.26 34 54.5	5.472	23	18 30 25.53	2.2414	S.28 25 42.6	0.956
	SATURDAY 14.					**MONDAY 16.**			
0	16 46 3.59	2.1762	S.26 40 19.0	5.346	0	18 32 40.01	2.2412	S.28 24 41.1	1.093
1	16 48 14.25	2.1790	26 45 36.0	5.220	1	18 34 54.47	2.2409	28 23 31.4	1.231
2	16 50 25.07	2.1817	26 50 45.4	5.093	2	18 37 8.91	2.2405	28 22 13.4	1.369
3	16 52 36.05	2.1843	26 55 47.2	4.966	3	18 39 23.33	2.2401	28 20 47.1	1.507
4	16 54 47.18	2.1868	27 0 41.3	4.838	4	18 41 37.72	2.2395	28 19 12.6	1.644
5	16 56 58.47	2.1894	27 5 27.7	4.710	5	18 43 52.07	2.2389	28 17 29.8	1.782
6	16 59 9.91	2.1919	27 10 6.5	4.582	6	18 46 6.39	2.2383	28 15 38.7	1.920
7	17 1 21.50	2.1943	27 14 37.5	4.452	7	18 48 20.67	2.2376	28 13 39.4	2.057
8	17 3 33.23	2.1967	27 19 0.7	4.323	8	18 50 34.90	2.2368	28 11 31.9	2.193
9	17 5 45.10	2.1990	27 23 16.2	4.193	9	18 52 49.08	2.2359	28 9 16.2	2.330
10	17 7 57.11	2.2013	27 27 23.9	4.063	10	18 55 3.21	2.2351	28 6 52.3	2.467
11	17 10 9.26	2.2036	27 31 23.7	3.932	11	18 57 17.29	2.2342	28 4 20.2	2.604
12	17 12 21.54	2.2057	27 35 15.7	3.801	12	18 59 31.31	2.2331	28 1 39.8	2.741
13	17 14 33.95	2.2078	27 38 59.8	3.669	13	19 1 45.26	2.2319	27 58 51.3	2.877
14	17 16 46.48	2.2099	27 42 36.0	3.537	14	19 3 59.14	2.2308	27 55 54.6	3.013
15	17 18 59.14	2.2120	27 46 4.2	3.404	15	19 6 12.96	2.2296	27 52 49.7	3.149
16	17 21 11.92	2.2139	27 49 24.5	3.272	16	19 8 26.70	2.2283	27 49 36.7	3.284
17	17 23 24.81	2.2158	27 52 36.8	3.138	17	19 10 40.36	2.2270	27 46 15.6	3.420
18	17 25 37.81	2.2176	27 55 41.1	3.005	18	19 12 53.94	2.2256	27 42 46.3	3.556
19	17 27 50.92	2.2193	27 58 37.4	2.872	19	19 15 7.43	2.2241	27 39 8.9	3.691
20	17 30 4.13	2.2210	28 1 25.7	2.738	20	19 17 20.83	2.2227	27 35 23.4	3.826
21	17 32 17.44	2.2227	28 4 5.9	2.605	21	19 19 34.15	2.2212	27 31 29.9	3.959
22	17 34 30.85	2.2243	28 6 38.0	2.468	22	19 21 47.37	2.2195	27 27 28.3	4.093
23	17 36 44.35	2.2258	28 9 2.0	2.333	23	19 24 0.49	2.2178	27 23 18.7	4.227
24	17 38 57.94	2.2273	S.28 11 18.0	2.199	24	19 26 13.51	2.2161	S.27 19 1.1	4.360

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 26 13.51	2.2161	S. 27 19 1.1	4.360
1	19 28 26.42	2.2143	27 14 35.5	4.493
2	19 30 39.22	2.2124	27 10 1.9	4.627
3	19 32 51.91	2.2106	27 5 20.3	4.759
4	19 35 4.49	2.2087	27 0 30.8	4.891
5	19 37 16.96	2.2068	26 55 33.4	5.023
6	19 39 29.31	2.2048	26 50 28.0	5.155
7	19 41 41.53	2.2027	26 45 14.8	5.285
8	19 43 53.63	2.2006	26 39 53.8	5.416
9	19 46 5.60	2.1984	26 34 24.9	5.547
10	19 48 17.44	2.1963	26 28 48.2	5.677
11	19 50 29.15	2.1941	26 23 3.7	5.806
12	19 52 40.73	2.1918	26 17 11.5	5.935
13	19 54 52.17	2.1895	26 11 11.5	6.063
14	19 57 3.47	2.1872	26 5 3.9	6.191
15	19 59 14.63	2.1848	25 58 48.6	6.319
16	20 1 25.65	2.1824	25 52 25.6	6.447
17	20 3 36.52	2.1800	25 45 55.0	6.573
18	20 5 47.25	2.1776	25 39 16.8	6.699
19	20 7 57.83	2.1751	25 32 31.1	6.825
20	20 10 8.26	2.1725	25 25 37.8	6.951
21	20 12 18.53	2.1699	25 18 37.0	7.076
22	20 14 28.65	2.1674	25 11 28.7	7.200
23	20 16 38.62	2.1649	S. 25 4 13.0	7.323

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 18 48.44	2.1623	S. 24 56 49.9	7.447
1	20 20 58.10	2.1597	24 49 19.4	7.570
2	20 23 7.60	2.1570	24 41 41.5	7.692
3	20 25 16.94	2.1543	24 33 56.3	7.814
4	20 27 26.12	2.1517	24 26 3.8	7.935
5	20 29 35.14	2.1490	24 18 4.1	8.056
6	20 31 44.00	2.1463	24 9 57.2	8.175
7	20 33 52.70	2.1436	24 1 43.1	8.295
8	20 36 1.24	2.1409	23 53 21.8	8.414
9	20 38 9.61	2.1382	23 44 53.4	8.532
10	20 40 17.82	2.1354	23 36 17.9	8.650
11	20 42 25.86	2.1327	23 27 35.4	8.767
12	20 44 33.74	2.1300	23 18 45.9	8.883
13	20 46 41.46	2.1272	23 9 49.4	8.999
14	20 48 49.01	2.1245	23 0 46.0	9.115
15	20 50 56.40	2.1217	22 51 35.6	9.230
16	20 53 3.62	2.1190	22 42 18.4	9.344
17	20 55 10.68	2.1162	22 32 54.4	9.458
18	20 57 17.57	2.1135	22 23 23.5	9.571
19	20 59 24.30	2.1108	22 13 45.9	9.683
20	21 1 30.87	2.1081	22 4 1.6	9.794
21	21 3 37.27	2.1053	21 54 10.6	9.905
22	21 5 43.51	2.1026	21 44 13.0	10.015
23	21 7 49.59	2.0999	21 34 8.8	10.124
24	21 9 55.50	2.0972	S. 21 23 58.1	10.233

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 9 55.50	2.0972	S. 21 23 58.1	10.233
1	21 12 1.25	2.0946	21 13 40.8	10.342
2	21 14 6.85	2.0920	21 3 17.1	10.449
3	21 16 12.29	2.0893	20 52 46.9	10.556
4	21 18 17.57	2.0867	20 42 10.3	10.662
5	21 20 22.70	2.0842	20 31 27.4	10.768
6	21 22 27.67	2.0816	20 20 38.1	10.874
7	21 24 32.49	2.0790	20 9 42.5	10.977
8	21 26 37.15	2.0764	19 58 40.8	11.080
9	21 28 41.66	2.0739	19 47 32.9	11.183
10	21 30 46.02	2.0715	19 36 18.8	11.286
11	21 32 50.24	2.0691	19 24 58.6	11.387
12	21 34 54.31	2.0667	19 13 32.4	11.487
13	21 36 58.24	2.0642	19 2 0.1	11.587
14	21 39 2.02	2.0618	18 50 21.9	11.686
15	21 41 5.66	2.0595	18 38 37.8	11.784
16	21 43 9.16	2.0572	18 26 47.8	11.883
17	21 45 12.52	2.0549	18 14 51.9	11.981
18	21 47 15.75	2.0527	18 2 50.1	12.077
19	21 49 18.85	2.0505	17 50 42.6	12.173
20	21 51 21.81	2.0483	17 38 29.5	12.266
21	21 53 24.64	2.0462	17 26 10.7	12.360
22	21 55 27.35	2.0442	17 13 46.3	12.453
23	21 57 29.94	2.0422	S. 17 1 16.4	12.545

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 59 32.41	2.0402	S. 16 48 40.9	12.637
1	22 1 34.76	2.0382	16 35 59.9	12.728
2	22 3 36.99	2.0362	16 23 13.5	12.817
3	22 5 39.11	2.0343	16 10 21.8	12.906
4	22 7 41.11	2.0325	15 57 24.8	12.995
5	22 9 43.01	2.0307	15 44 22.4	13.083
6	22 11 44.80	2.0290	15 31 14.8	13.169
7	22 13 46.49	2.0273	15 18 2.1	13.255
8	22 15 48.08	2.0257	15 4 44.2	13.341
9	22 17 49.57	2.0240	14 51 21.2	13.425
10	22 19 50.96	2.0225	14 37 53.2	13.508
11	22 21 52.27	2.0211	14 24 20.2	13.591
12	22 23 53.49	2.0197	14 10 42.3	13.672
13	22 25 54.63	2.0182	13 56 59.5	13.753
14	22 27 55.68	2.0168	13 43 11.9	13.833
15	22 29 56.65	2.0156	13 29 19.6	13.912
16	22 31 57.55	2.0144	13 15 22.5	13.991
17	22 33 58.38	2.0133	13 1 20.7	14.068
18	22 35 59.14	2.0122	12 47 14.3	14.144
19	22 37 59.84	2.0112	12 33 3.4	14.220
20	22 40 0.48	2.0101	12 18 47.9	14.295
21	22 42 1.05	2.0091	12 4 28.0	14.368
22	22 44 1.57	2.0083	11 50 3.7	14.441
23	22 46 2.04	2.0075	11 35 35.1	14.513
24	22 48 2.47	2.0067	S. 11 21 2.2	14.584

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 48 2.47	2.0067	S. 11 21 2.2	14.584
1	22 50 2.85	2.0061	11 6 25.0	14.654
2	22 52 3.20	2.0055	10 51 43.7	14.723
3	22 54 3.51	2.0049	10 36 58.3	14.791
4	22 56 3.79	2.0044	10 22 8.8	14.858
5	22 58 4.04	2.0040	10 7 15.3	14.924
6	23 0 4.27	2.0037	9 52 17.9	14.989
7	23 2 4.48	2.0034	9 37 16.6	15.053
8	23 4 4.67	2.0031	9 22 11.5	15.117
9	23 6 4.85	2.0029	9 7 2.6	15.179
10	23 8 5.02	2.0029	8 51 50.0	15.240
11	23 10 5.20	2.0030	8 36 33.8	15.300
12	23 12 5.38	2.0031	8 21 14.0	15.359
13	23 14 5.57	2.0032	8 5 50.7	15.417
14	23 16 5.76	2.0033	7 50 24.0	15.474
15	23 18 5.96	2.0035	7 34 53.8	15.531
16	23 20 6.18	2.0039	7 19 20.3	15.585
17	23 22 6.43	2.0043	7 3 43.6	15.638
18	23 24 6.70	2.0047	6 48 3.7	15.691
19	23 26 7.00	2.0053	6 32 20.7	15.742
20	23 28 7.34	2.0060	6 16 34.6	15.793
21	23 30 7.72	2.0068	6 0 45.5	15.842
22	23 32 8.15	2.0076	5 44 53.5	15.890
23	23 34 8.63	2.0084	S. 5 28 58.7	15.938

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 36 9.16	2.0093	S. 5 13 1.0	15.984
1	23 38 9.75	2.0104	4 57 0.6	16.028
2	23 40 10.41	2.0115	4 40 57.6	16.072
3	23 42 11.13	2.0126	4 24 52.0	16.114
4	23 44 11.92	2.0138	4 8 43.9	16.155
5	23 46 12.79	2.0152	3 52 33.4	16.194
6	23 48 13.75	2.0167	3 36 20.6	16.232
7	23 50 14.79	2.0182	3 20 5.5	16.270
8	23 52 15.93	2.0197	3 3 48.2	16.307
9	23 54 17.16	2.0213	2 47 28.7	16.342
10	23 56 18.49	2.0231	2 31 7.2	16.375
11	23 58 19.93	2.0249	2 14 43.7	16.407
12	0 0 21.48	2.0267	1 58 18.3	16.438
13	0 2 23.14	2.0287	1 41 51.1	16.468
14	0 4 24.93	2.0309	1 25 22.2	16.496
15	0 6 26.85	2.0331	1 8 51.6	16.523
16	0 8 28.90	2.0353	0 52 19.4	16.549
17	0 10 31.09	2.0376	0 35 45.7	16.573
18	0 12 33.41	2.0399	0 19 10.6	16.597
19	0 14 35.88	2.0424	S. 0 2 34.1	16.618
20	0 16 38.50	2.0450	N. 0 14 3.6	16.638
21	0 18 41.28	2.0477	0 30 42.4	16.656
22	0 20 44.22	2.0504	0 47 22.3	16.673
23	0 22 47.33	2.0532	1 4 3.2	16.689
24	0 24 50.61	2.0562	N. 1 20 45.0	16.703

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 24 50.61	2.0562	N. 1 20 45.0	16.703
1	0 26 54.07	2.0592	1 37 27.6	16.717
2	0 28 57.71	2.0622	1 54 11.0	16.728
3	0 31 1.53	2.0653	2 10 55.0	16.738
4	0 33 5.55	2.0686	2 27 39.5	16.746
5	0 35 9.76	2.0719	2 44 24.5	16.752
6	0 37 14.18	2.0754	3 1 9.8	16.758
7	0 39 18.81	2.0789	3 17 55.4	16.762
8	0 41 23.65	2.0825	3 34 41.2	16.763
9	0 43 28.71	2.0862	3 51 27.0	16.763
10	0 45 33.99	2.0899	4 8 12.8	16.762
11	0 47 39.50	2.0937	4 24 58.5	16.760
12	0 49 45.24	2.0977	4 41 44.0	16.756
13	0 51 51.22	2.1017	4 58 29.2	16.750
14	0 53 57.45	2.1058	5 15 14.0	16.742
15	0 56 3.92	2.1100	5 31 58.2	16.732
16	0 58 10.65	2.1143	5 48 41.8	16.721
17	1 0 17.64	2.1187	6 5 24.7	16.708
18	1 2 24.89	2.1231	6 22 6.8	16.694
19	1 4 32.41	2.1277	6 38 48.0	16.677
20	1 6 40.21	2.1323	6 55 28.1	16.659
21	1 8 48.28	2.1369	7 12 7.1	16.639
22	1 10 56.64	2.1417	7 28 44.8	16.618
23	1 13 5.29	2.1466	N. 7 45 21.2	16.595

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 15 14.23	2.1515	N. 8 1 56.2	16.570
1	1 17 23.47	2.1566	8 18 29.6	16.543
2	1 19 33.02	2.1617	8 35 1.3	16.513
3	1 21 42.87	2.1669	8 51 31.2	16.482
4	1 23 53.04	2.1722	9 7 59.2	16.450
5	1 26 3.53	2.1775	9 24 25.2	16.416
6	1 28 14.34	2.1829	9 40 49.1	16.379
7	1 30 25.48	2.1885	9 57 10.7	16.341
8	1 32 36.96	2.1941	10 13 30.0	16.301
9	1 34 48.77	2.1998	10 29 46.8	16.258
10	1 37 0.93	2.2055	10 46 1.0	16.214
11	1 39 13.43	2.2113	11 2 12.5	16.167
12	1 41 26.28	2.2172	11 18 21.1	16.119
13	1 43 39.49	2.2232	11 34 26.8	16.069
14	1 45 53.06	2.2292	11 50 29.4	16.018
15	1 48 6.99	2.2353	12 6 28.9	15.964
16	1 50 21.29	2.2415	12 22 25.1	15.907
17	1 52 35.97	2.2477	12 38 17.8	15.849
18	1 54 51.02	2.2540	12 54 7.0	15.789
19	1 57 6.45	2.2604	13 9 52.5	15.727
20	1 59 22.27	2.2669	13 25 34.2	15.663
21	2 1 38.48	2.2734	13 41 12.0	15.598
22	2 3 55.08	2.2799	13 56 45.7	15.527
23	2 6 12.07	2.2865	14 12 15.3	15.457
24	2 8 29.46	2.2933	N. 14 27 40.6	15.384

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 8 29.46	2.2933	N.14 27 40.6	15.384
1	2 10 47.26	2.3001	14 43 1.4	15.309
2	2 13 5.47	2.3069	14 58 17.7	15.232
3	2 15 24.08	2.3137	15 13 29.3	15.153
4	2 17 43.11	2.3206	15 28 36.1	15.072
5	2 20 2.55	2.3275	15 43 37.9	14.988
6	2 22 22.41	2.3345	15 58 34.7	14.903
7	2 24 42.69	2.3416	16 13 26.3	14.815
8	2 27 3.40	2.3487	16 28 12.5	14.725
9	2 29 24.54	2.3558	16 42 53.3	14.633
10	2 31 46.10	2.3630	16 57 28.5	14.539
11	2 34 8.10	2.3702	17 11 58.0	14.443
12	2 36 30.53	2.3775	17 26 21.7	14.345
13	2 38 53.40	2.3847	17 40 39.4	14.243
14	2 41 16.70	2.3920	17 54 50.9	14.140
15	2 43 40.44	2.3993	18 8 56.2	14.036
16	2 46 4.62	2.4067	18 22 55.2	13.928
17	2 48 29.24	2.4141	18 36 47.6	13.819
18	2 50 54.31	2.4215	18 50 33.4	13.707
19	2 53 19.82	2.4289	19 4 12.4	13.593
20	2 55 45.78	2.4363	19 17 44.5	13.477
21	2 58 12.18	2.4437	19 31 9.6	13.359
22	3 0 39.03	2.4512	19 44 27.6	13.238
23	3 3 6.33	2.4587	N.19 57 38.2	13.115

THURSDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	3 5 34.07	2.4661	N.20 10 41.4	12.990
1	3 8 2.26	2.4735	20 23 37.0	12.863
2	3 10 30.89	2.4809	20 36 25.0	12.735
3	3 12 59.97	2.4883	20 49 5.2	12.603
4	3 15 29.49	2.4957	21 1 37.4	12.469
5	3 17 59.46	2.5032	21 14 1.5	12.334
6	3 20 29.88	2.5106	21 26 17.5	12.197
7	3 23 0.74	2.5179	21 38 25.1	12.057
8	3 25 32.03	2.5252	21 50 24.3	11.915
9	3 28 3.76	2.5324	22 2 14.9	11.772
10	3 30 35.92	2.5397	22 13 56.9	11.626
11	3 33 8.52	2.5469	22 25 30.0	11.477
12	3 35 41.55	2.5541	22 36 54.1	11.326
13	3 38 15.01	2.5612	22 48 9.1	11.174
14	3 40 48.89	2.5682	22 59 15.0	11.021
15	3 43 23.19	2.5752	23 10 11.6	10.865
16	3 45 57.91	2.5821	23 20 58.8	10.707
17	3 48 33.04	2.5890	23 31 36.4	10.546
18	3 51 8.59	2.5959	23 42 4.3	10.383
19	3 53 44.55	2.6026	23 52 22.4	10.220
20	3 56 20.90	2.6091	24 2 30.7	10.055
21	3 58 57.64	2.6156	24 12 29.0	9.887
22	4 1 34.77	2.6221	24 22 17.2	9.717
23	4 4 12.29	2.6286	24 31 55.1	9.546
24	4 6 50.20	2.6349	N.24 41 22.7	9.373

FRIDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	4 6 50.20	2.6349	N.24 41 22.7	9.373
1	4 9 28.48	2.6411	24 50 39.9	9.199
2	4 12 7.13	2.6471	24 59 46.6	9.022
3	4 14 46.13	2.6530	25 8 42.6	8.844
4	4 17 25.49	2.6589	25 17 27.9	8.664
5	4 20 5.20	2.6647	25 26 2.3	8.483
6	4 22 45.25	2.6703	25 34 25.8	8.300
7	4 25 25.64	2.6758	25 42 38.3	8.116
8	4 28 6.35	2.6812	25 50 39.7	7.929
9	4 30 47.38	2.6864	25 58 29.8	7.741
10	4 33 28.72	2.6915	26 0 8.6	7.552
11	4 36 10.36	2.6964	26 13 36.1	7.363
12	4 38 52.29	2.7012	26 20 52.2	7.172
13	4 41 34.51	2.7059	26 27 56.7	6.978
14	4 44 17.00	2.7104	26 34 49.6	6.784
15	4 46 59.76	2.7148	26 41 30.8	6.588
16	4 49 42.78	2.7190	26 48 0.2	6.392
17	4 52 26.04	2.7230	26 54 17.8	6.194
18	4 55 9.54	2.7269	27 0 23.5	5.995
19	4 57 53.27	2.7306	27 6 17.2	5.795
20	5 0 37.21	2.7341	27 11 58.9	5.595
21	5 3 21.36	2.7374	27 17 28.6	5.394
22	5 6 5.70	2.7406	27 22 46.2	5.191
23	5 8 50.23	2.7436	N.27 27 51.5	4.987

SATURDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	5 11 34.93	2.7463	N.27 32 44.6	4.782
1	5 14 19.79	2.7490	27 37 25.4	4.577
2	5 17 4.81	2.7515	27 41 53.9	4.372
3	5 19 49.97	2.7537	27 46 10.0	4.165
4	5 22 35.25	2.7557	27 50 13.7	3.958
5	5 25 20.65	2.7575	27 54 4.9	3.750
6	5 28 6.15	2.7592	27 57 43.7	3.542
7	5 30 51.75	2.7606	28 1 10.0	3.333
8	5 33 37.42	2.7618	28 4 23.7	3.124
9	5 36 23.16	2.7628	28 7 24.9	2.915
10	5 39 8.96	2.7637	28 10 13.5	2.706
11	5 41 54.80	2.7643	28 12 49.6	2.497
12	5 44 40.67	2.7647	28 15 13.1	2.287
13	5 47 26.56	2.7649	28 17 24.0	2.077
14	5 50 12.46	2.7650	28 19 22.3	1.866
15	5 52 58.36	2.7648	28 21 7.9	1.655
16	5 55 44.24	2.7643	28 22 40.9	1.445
17	5 58 30.08	2.7637	28 24 1.3	1.235
18	6 1 15.88	2.7629	28 25 9.1	1.025
19	6 4 1.63	2.7619	28 26 4.3	0.815
20	3 6 47.31	2.7607	28 26 46.9	0.606
21	6 9 32.91	2.7593	28 27 17.0	0.397
22	6 12 18.41	2.7576	28 27 34.5	+ 0.188
23	6 15 3.81	2.7557	28 27 39.5	− 0.021
24	6 17 49.10	2.7537	N.28 27 32.0	0.229

GREENWICH MEAN TIME

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	6 17 49.10	2.7537	N.28 27 32.0	0.229
1	6 20 34.26	2.7514	28 27 12.0	0.437
2	6 23 19.27	2.7489	28 26 39.6	0.643
3	6 26 4.13	2.7462	28 25 54.8	0.849
4	6 28 48.82	2.7434	28 24 57.7	1.055
5	6 31 33.34	2.7405	28 23 48.2	1.261
6	6 34 17.68	2.7373	28 22 26.4	1.465
7	6 37 1.82	2.7338	28 20 52.4	1.668
8	6 39 45.74	2.7302	28 19 6.2	1.871
9	6 42 29.44	2.7264	28 17 7.9	2.073
10	6 45 12.91	2.7224	28 14 57.5	2.274
11	6 47 56.13	2.7182	28 12 35.0	2.475
12	6 50 39.10	2.7139	28 10 0.5	2.674
13	6 53 21.80	2.7094	28 7 14.1	2.872
14	6 56 4.23	2.7048	28 4 15.9	3.068
15	6 58 46.38	2.7000	28 1 5.9	3.264
16	7 1 28.23	2.6949	27 57 44.2	3.459
17	7 4 9.77	2.6898	27 54 10.8	3.652
18	7 6 51.00	2.6845	27 50 25.9	3.844
19	7 9 31.91	2.6790	27 46 29.5	4.036
20	7 12 12.48	2.6733	27 42 21.6	4.226
21	7 14 52.71	2.6676	27 38 2.4	4.414
22	7 17 32.59	2.6618	27 33 31.9	4.601
23	7 20 12.12	2.6558	N.27 28 50.3	4.786

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	7 22 51.28	2.6496	N.27 23 57.6	4.971
1	7 25 30.07	2.6432	27 18 53.8	5.154
2	7 28 8.47	2.6367	27 13 39.1	5.335
3	7 30 46.48	2.6302	27 8 13.6	5.515
4	7 33 24.10	2.6236	27 2 37.3	5.693
5	7 36 1.31	2.6168	26 56 50.4	5.869
6	7 38 38.11	2.6098	26 50 53.0	6.044
7	7 41 14.49	2.6029	26 44 45.1	6.218
8	7 43 50.46	2.5959	26 38 26.8	6.391
9	7 46 26.00	2.5887	26 31 58.2	6.562
10	7 49 1.11	2.5814	26 25 19.4	6.730
11	7 51 35.77	2.5740	26 18 30.6	6.897
12	7 54 9.99	2.5666	26 11 31.8	7.062
13	7 56 43.76	2.5591	26 4 23.1	7.226
14	7 59 17.08	2.5515	25 57 4.7	7.387
15	8 1 49.94	2.5438	25 49 36.6	7.547
16	8 4 22.34	2.5361	25 41 59.0	7.706
17	8 6 54.27	2.5283	25 34 11.9	7.863
18	8 9 25.74	2.5205	25 26 15.4	8.018
19	8 11 56.73	2.5126	25 18 9.7	8.171
20	8 14 27.25	2.5047	25 9 54.9	8.322
21	8 16 57.29	2.4967	25 1 31.0	8.472
22	8 19 26.85	2.4887	24 52 58.2	8.620
23	8 21 55.93	2.4806	24 44 16.6	8.766
24	8 24 24.52	2.4724	N.24 35 26.3	8.910

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 24 24.52	2.4724	N.24 35 26.3	8.910
1	8 26 52.62	2.4643	24 26 27.4	9.052
2	8 29 20.24	2.4562	24 17 20.0	9.192
3	8 31 47.37	2.4480	24 8 4.3	9.331
4	8 34 14.00	2.4398	23 58 40.3	9.468
5	8 36 40.14	2.4316	23 49 8.1	9.604
6	8 39 5.79	2.4233	23 39 27.8	9.738
7	8 41 30.94	2.4151	23 29 39.6	9.869
8	8 43 55.60	2.4069	23 19 43.5	9.998
9	8 46 19.77	2.3987	23 9 39.8	10.125
10	8 48 43.44	2.3904	22 59 28.5	10.252
11	8 51 6.62	2.3822	22 49 9.6	10.377
12	8 53 29.30	2.3739	22 38 43.3	10.499
13	8 55 51.49	2.3657	22 28 9.7	10.619
14	8 58 13.19	2.3575	22 17 29.0	10.738
15	9 0 34.39	2.3493	22 6 41.2	10.855
16	9 2 55.10	2.3412	21 55 46.4	10.970
17	9 5 15.33	2.3332	21 44 44.8	11.083
18	9 7 35.08	2.3251	21 33 36.4	11.195
19	9 9 54.34	2.3169	21 22 21.4	11.304
20	9 12 13.11	2.3088	21 10 59.9	11.413
21	9 14 31.40	2.3008	20 59 31.9	11.520
22	9 16 49.21	2.2928	20 47 57.5	11.624
23	9 19 6.54	2.2848	N.20 36 17.0	11.726

WEDNESDAY, NOVEMBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 21 23.39	2.2769	N.20 24 30.4	11.827

PHASES OF THE MOON.

		d	h	m
☾ Last Quarter . .	Oct.	2	3	18.9
● New Moon		9	8	27.1
☽ First Quarter . . .		17	11	19.8
○ Full Moon		24	19	27.9
☾ Last Quarter		31	10	42.0

		d	h
☾ Apogee	Oct.	14	22.0
☾ Perigee		26	18.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Pegasi	W.	89° 47′ 5″	2588	91° 26′ 16″	2594	93° 5′ 19″	2600	94° 44′ 14″	2607
	α Arietis	W.	47 8 3	2353	48 52 46	2353	50 37 28	2354	52 22 9	2355
	Jupiter	W.	22 57 15	2343	24 42 12	2336	26 27 19	2331	28 12 33	2326
	Regulus	E.	64 56 40	2278	63 10 8	2283	61 23 43	2288	59 37 26	2294
	Sun	E.	105 0 48	2577	103 21 22	2583	101 42 3	2588	100 2 51	2593
2	α Arietis	W.	61 4 50	2369	62 49 9	2373	64 33 23	2377	66 17 31	2381
	Jupiter	W.	36 59 1	2333	38 44 12	2335	40 29 20	2339	42 14 23	2342
	Aldebaran	W.	31 12 12	2525	32 52 51	2512	34 33 48	2501	36 15 0	2492
	Regulus	E.	50 48 6	2324	49 2 41	2330	47 17 25	2337	45 32 19	2344
	Sun	E.	91 48 46	2622	90 10 21	2628	88 32 4	2635	86 53 56	2640
3	α Arietis	W.	74 56 29	2407	76 39 54	2412	78 23 11	2418	80 6 20	2424
	Jupiter	W.	50 58 11	2365	52 42 36	2370	54 26 54	2375	56 11 4	2381
	Aldebaran	W.	44 43 14	2474	46 25 4	2473	48 6 55	2474	49 48 45	2475
	Regulus	E.	36 49 27	2382	35 5 26	2391	33 21 38	2400	31 38 3	2410
	Sun	E.	78 45 26	2674	77 8 11	2681	75 31 5	2687	73 54 8	2694
4	α Arietis	W.	88 39 56	2455	90 22 12	2462	92 4 18	2470	93 46 14	2477
	Jupiter	W.	64 49 53	2410	66 33 13	2416	68 16 25	2422	69 59 28	2429
	Aldebaran	W.	58 17 14	2489	59 58 43	2493	61 40 6	2497	63 21 23	2502
	Sun	E.	65 51 44	2730	64 15 44	2737	62 39 53	2744	61 4 12	2752
5	Jupiter	W.	78 32 24	2462	80 14 30	2469	81 56 27	2476	83 38 14	2483
	Aldebaran	W.	71 46 3	2529	73 26 36	2535	75 7 0	2542	76 47 15	2548
	Pollux	W.	27 39 21	2470	29 21 16	2477	31 3 2	2484	32 44 38	2490
	Sun	E.	53 8 17	2790	51 33 36	2798	49 59 5	2806	48 24 45	2814
6	Jupiter	W.	92 4 35	2520	93 45 20	2528	95 25 54	2535	97 6 18	2544
	Aldebaran	W.	85 6 12	2583	86 45 30	2591	88 24 37	2599	90 3 33	2607
	Pollux	W.	41 10 11	2527	42 50 46	2535	44 31 11	2543	46 11 25	2551
	Sun	E.	40 35 40	2855	39 2 23	2863	37 29 17	2872	35 56 22	2881
7	Aldebaran	W.	98 15 27	2650	99 53 14	2659	101 30 49	2669	103 8 11	2678
	Pollux	W.	54 29 50	2591	56 8 57	2599	57 47 53	2608	59 26 37	2617
	Sun	E.	28 14 38	2925	26 42 51	2935	25 11 16	2944	23 39 53	2954
10	Sun	W.	7 31 46	3171	8 58 30	3182	10 25 1	3193	11 51 19	3203
	Antares	E.	43 29 36	2815	41 55 28	2825	40 21 32	2835	38 47 49	2844
	α Aquilæ	E.	94 54 34	3660	93 37 4	3667	92 19 42	3675	91 2 28	3684
11	Sun	W.	18 59 47	3254	20 24 52	3264	21 49 46	3274	23 14 28	3284
	Antares	E.	31 2 22	2892	29 29 53	2902	27 57 37	2912	26 25 33	2920
	α Aquilæ	E.	84 39 2	3743	83 23 0	3758	82 7 14	3773	80 51 44	3790
12	Sun	W.	30 15 7	3332	31 38 42	3340	33 2 7	3349	34 25 22	3358
	α Aquilæ	E.	74 38 53	3888	73 25 21	3912	72 12 13	3935	70 59 29	3961
	Fomalhaut	E.	100 58 32	3168	99 31 45	3175	98 5 6	3181	96 38 34	3188
13	Sun	W.	41 19 18	3395	42 41 40	3402	44 3 54	3409	45 26 0	3415
	α Aquilæ	E.	65 2 35	4109	63 52 42	4144	62 43 23	4181	61 34 39	4219
	Fomalhaut	E.	89 27 52	3220	88 2 7	3227	86 36 30	3233	85 11 0	3240

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff.
1	α Pegasi	W.	96° 23′ 0″	2614	98° 1′ 36″	2622	99° 40′ 1″	2631	101° 18′ 14″	2641
	α Arietis	W.	54 6 48	2357	55 51 24	2359	57 35 57	2362	59 20 26	2366
	Jupiter	W.	29 57 51	2328	31 43 10	2328	33 28 29	2329	35 13 46	2331
	Regulus	E.	57 51 17	2299	56 5 16	2305	54 19 24	2311	52 33 41	2317
	Sun	E.	98 23 47	2599	96 44 50	2604	95 6 1	2610	93 27 19	2616
2	α Arietis	W.	68 1 33	2386	69 45 28	2391	71 29 16	2396	73 12 56	2401
	Jupiter	W.	43 59 21	2346	45 44 13	2350	47 28 59	2355	49 13 38	2359
	Aldebaran	W.	37 56 25	2485	39 37 59	2480	41 19 40	2477	43 1 25	2475
	Regulus	E.	43 47 23	2351	42 2 38	2358	40 18 3	2366	38 33 39	2374
	Sun	E.	85 15 56	2647	83 38 5	2654	82 0 23	2660	80 22 50	2667
3	α Arietis	W.	81 49 21	2430	83 32 13	2436	85 14 56	2442	86 57 31	2449
	Jupiter	W.	57 55 6	2387	59 39 0	2392	61 22 46	2398	63 6 24	2404
	Aldebaran	W.	51 30 33	2477	53 12 19	2480	54 54 1	2482	56 35 40	2485
	Regulus	E.	29 54 42	2420	28 11 36	2431	26 28 46	2443	24 46 13	2455
	Sun	E.	72 17 20	2701	70 40 42	2708	69 4 13	2716	67 27 54	2722
4	α Arietis	W.	95 28 0	2484	97 9 36	2491	98 51 2	2499	100 32 17	2506
	Jupiter	W.	71 42 22	2435	73 25 7	2442	75 7 42	2448	76 50 8	2455
	Aldebaran	W.	65 2 33	2507	66 43 37	2512	68 24 33	2517	70 5 22	2523
	Sun	E.	59 28 41	2760	57 53 20	2767	56 18 9	2775	54 43 8	2782
5	Jupiter	W.	85 19 51	2490	87 1 18	2498	88 42 34	2505	90 23 40	2513
	Aldebaran	W.	78 27 22	2555	80 7 19	2561	81 47 7	2569	83 26 44	2576
	Pollux	W.	34 26 5	2497	36 7 22	2504	37 48 29	2512	39 29 25	2520
	Sun	E.	46 50 35	2621	45 16 35	2630	43 42 46	2638	42 9 8	2646
6	Jupiter	W.	98 46 30	2552	100 26 31	2560	102 6 21	2568	103 46 0	2577
	Aldebaran	W.	91 42 19	2615	93 20 53	2624	94 59 16	2632	96 37 27	2640
	Pollux	W.	47 51 28	2559	49 31 20	2566	51 11 1	2574	52 50 31	2583
	Sun	E.	34 23 39	2890	32 51 7	2898	31 18 46	2907	29 46 36	2916
7	Aldebaran	W.	104 45 21	2687	106 22 18	2696	107 59 1	2707	109 35 31	2719
	Pollux	W.	61 5 9	2626	62 43 29	2635	64 21 37	2643	65 59 33	2653
	Sun	E.	22 8 42	2963	20 37 43	2973	19 6 57	2983	17 36 23	2992
10	Sun	W.	13 17 25	3913	14 43 19	3924	16 9 0	3933	17 34 30	3944
	Antares	E.	37 14 18	2854	35 41 0	2864	34 7 55	2873	32 35 2	2883
	α Aquilæ	E.	89 45 24	3693	88 28 30	3705	87 11 48	3716	85 55 18	3729
11	Sun	W.	24 38 58	3294	26 3 17	3303	27 27 25	3313	28 51 21	3322
	Antares	E.	24 53 40	2930	23 21 59	2939	21 50 29	2947	20 19 10	2956
	α Aquilæ	E.	79 36 31	3808	78 21 37	3826	77 7 2	3846	75 52 47	3866
12	Sun	W.	35 48 27	3365	37 11 23	3373	38 34 10	3381	39 56 48	3388
	α Aquilæ	E.	69 47 11	3987	68 35 19	4016	67 23 55	4045	66 13 0	4076
	Fomalhaut	E.	95 12 10	3194	93 45 54	3900	92 19 45	3906	90 53 45	3914
13	Sun	W.	46 48 0	3421	48 9 53	3426	49 31 40	3431	50 53 21	3436
	α Aquilæ	E.	60 26 31	4251	59 19 2	4304	58 12 13	4351	57 6 7	4399
	Fomalhaut	E.	83 45 38	3847	82 20 24	3853	80 55 17	3859	79 30 18	3865

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
14	Sun	W.	52° 14′ 57″	3440	53° 36′ 28″	3444	54° 57′ 55″	3447	56° 19′ 18″	3451
	Venus	W.	11 4 27	3564	12 23 41	3559	13 43 0	3556	15 2 22	3555
	α Aquilæ	E.	56 0 45	4452	54 56 10	4508	53 52 25	4567	52 49 32	4631
	Fomalhaut	E.	78 5 26	3271	76 40 41	3277	75 16 3	3283	73 51 32	3290
	α Pegasi	E.	99 26 23	3393	98 3 58	3393	96 41 34	3394	95 19 11	3396
15	Sun	W.	63 5 31	3459	64 26 41	3459	65 47 51	3459	67 9 1	3459
	Venus	W.	21 39 40	3548	22 59 11	3546	24 18 44	3545	25 38 18	3544
	α Aquilæ	E.	47 49 58	5031	46 53 27	5131	45 58 13	5240	45 4 21	5358
	Fomalhaut	E.	66 50 44	3319	65 26 54	3325	64 3 12	3332	62 39 37	3338
	α Pegasi	E.	88 27 39	3402	87 5 25	3403	85 43 12	3404	84 21 0	3405
16	Sun	W.	73 55 11	3448	75 16 33	3444	76 38 0	3439	77 59 32	3435
	Venus	W.	32 16 47	3528	33 36 40	3525	34 56 37	3519	36 16 40	3515
	Antares	W.	28 49 59	3069	30 18 46	3066	31 47 37	3062	33 16 33	3058
	Fomalhaut	E.	55 43 32	3372	54 20 43	3380	52 58 4	3388	51 35 34	3396
	α Pegasi	E.	77 30 17	3409	76 8 11	3411	74 46 7	3412	73 24 4	3413
17	Sun	W.	84 48 43	3404	86 10 55	3395	87 33 17	3387	88 55 48	3378
	Venus	W.	42 58 32	3480	44 19 18	3471	45 40 14	3463	47 1 20	3454
	Antares	W.	40 42 46	3029	42 12 23	3021	43 42 10	3014	45 12 6	3005
	Fomalhaut	E.	44 46 6	3461	43 24 58	3478	42 4 9	3497	40 43 42	3520
	α Pegasi	E.	66 34 9	3421	65 12 16	3423	63 50 25	3426	62 28 38	3429
	α Arietis	E.	107 39 40	3080	106 11 6	3071	104 42 21	3063	103 13 26	3054
18	Sun	W.	95 51 10	3325	97 14 52	3314	98 38 47	3301	100 2 57	3289
	Venus	W.	53 49 37	3400	55 11 54	3387	56 34 25	3374	57 57 11	3361
	Antares	W.	52 44 33	2957	54 15 40	2946	55 47 0	2935	57 18 35	2923
	α Pegasi	E.	55 40 49	3455	54 19 35	3464	52 58 31	3474	51 37 38	3486
	α Arietis	E.	95 45 58	3004	94 15 50	2993	92 45 28	2981	91 14 52	2969
	Jupiter	E.	118 38 47	2942	117 7 22	2930	115 35 41	2918	114 3 45	2906
19	Sun	W.	107 7 39	3218	108 33 27	3203	109 59 33	3188	111 25 57	3171
	Antares	W.	65 0 27	2857	66 33 41	2843	68 7 13	2829	69 41 3	2814
	Venus	W.	64 54 58	3288	66 19 23	3273	67 44 6	3257	69 9 8	3240
	α Arietis	E.	83 37 58	2905	82 5 45	2891	80 33 15	2877	79 0 27	2863
	Jupiter	E.	106 20 4	2839	104 46 27	2825	103 12 32	2810	101 38 17	2795
	Aldebaran	E.	114 3 40	2927	112 31 56	2912	110 59 52	2896	109 27 28	2880
20	Sun	W.	118 42 57	3086	120 11 24	3069	121 40 12	3051	123 9 22	3032
	Antares	W.	77 35 14	2735	79 11 7	2719	80 47 22	2702	82 23 59	2685
	Venus	W.	76 19 20	3153	77 46 25	3135	79 13 52	3116	80 41 42	3098
	α Arietis	E.	71 11 44	2788	69 37 1	2772	68 1 57	2757	66 26 33	2742
	Jupiter	E.	93 42 1	2716	92 5 42	2700	90 29 2	2683	88 51 59	2666
	Aldebaran	E.	101 40 10	2796	100 5 37	2779	98 30 42	2762	96 55 24	2745
21	Antares	W.	90 32 51	2599	92 11 48	2581	93 51 9	2563	95 30 55	2545
	Venus	W.	88 6 37	3002	89 36 47	2983	91 7 21	2963	92 38 20	2944
	α Aquilæ	W.	49 33 9	4306	50 39 54	4210	51 48 11	4117	52 57 56	4032
	α Arietis	E.	58 24 25	2665	56 46 58	2649	55 9 10	2635	53 31 2	2621
	Jupiter	E.	80 40 59	2580	79 1 37	2562	77 21 50	2545	75 41 39	2527
	Aldebaran	E.	88 53 10	2657	87 15 33	2640	85 37 32	2622	83 59 7	2605

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	Sun	W.	57° 40′ 37″	3453	59° 1′ 54″	3455	60° 23′ 8″	3457	61° 44′ 20″	3458
	Venus	W.	16 21 46	3553	17 41 12	3551	19 0 40	3550	20 20 9	3548
	α Aquilæ	E.	51 47 34	4699	50 46 34	4774	49 46 36	4853	48 47 43	4937
	Fomalhaut	E.	72 27 9	3296	71 2 53	3301	69 38 43	3307	68 14 40	3313
	α Pegasi	E.	93 56 50	3397	92 34 30	3399	91 12 12	3400	89 49 55	3400
15	Sun	W.	68 30 11	3457	69 51 23	3456	71 12 36	3454	72 33 52	3451
	Venus	W.	26 57 54	3541	28 17 33	3539	29 37 14	3535	30 56 59	3533
	α Aquilæ	E.	44 11 56	5487	43 21 3	5629	42 31 48	5784	41 44 17	5954
	Fomalhaut	E.	61 16 9	3344	59 52 48	3351	58 29 35	3357	57 6 29	3365
	α Pegasi	E.	82 58 49	3406	81 36 39	3408	80 14 31	3408	78 52 23	3409
16	Sun	W.	79 21 9	3430	80 42 52	3423	82 4 42	3417	83 26 39	3411
	Venus	W.	37 36 48	3508	38 57 3	3502	40 17 25	3496	41 37 54	3488
	Antares	W.	34 45 34	3052	36 14 42	3047	37 43 56	3042	39 13 17	3036
	Fomalhaut	E.	50 13 15	3408	48 51 8	3419	47 29 13	3431	46 7 32	3445
	α Pegasi	E.	72 2 2	3414	70 40 1	3415	69 18 2	3416	67 56 4	3419
17	Sun	W.	90 18 30	3369	91 41 22	3358	93 4 26	3348	94 27 42	3338
	Venus	W.	48 22 36	3444	49 44 3	3433	51 5 42	3423	52 27 33	3411
	Antares	W.	46 42 13	2997	48 12 30	2987	49 42 59	2977	51 13 40	2968
	Fomalhaut	E.	39 23 40	3545	38 4 6	3575	36 45 4	3609	35 26 39	3646
	α Pegasi	E.	61 6 54	3433	59 45 15	3437	58 23 40	3442	57 2 11	3448
	α Arietis	E.	101 44 20	3045	100 15 3	3035	98 45 34	3026	97 15 53	3014
18	Sun	W.	101 27 21	3276	102 52 1	3262	104 16 57	3248	105 42 9	3233
	Venus	W.	59 20 12	3348	60 43 28	3333	62 7 1	3319	63 30 51	3304
	Antares	W.	58 50 25	2910	60 22 31	2898	61 54 53	2885	63 27 31	2871
	α Pegasi	E.	50 16 57	3499	48 56 32	3515	47 36 24	3533	46 16 36	3554
	α Arietis	E.	89 44 1	2957	88 12 54	2945	86 41 32	2931	85 9 53	2919
	Jupiter	E.	112 31 34	2894	110 59 7	2880	109 26 23	2867	107 53 22	2854
19	Sun	W.	112 52 41	3156	114 19 44	3138	115 47 8	3121	117 14 52	3104
	Antares	W.	71 15 13	2799	72 49 42	2783	74 24 32	2768	75 59 42	2751
	Venus	W.	70 34 30	3223	72 0 12	3206	73 26 14	3189	74 52 36	3171
	α Arietis	E.	77 27 21	2848	75 53 55	2834	74 20 11	2818	72 46 7	2804
	Jupiter	E.	100 3 43	2780	98 28 49	2764	96 53 34	2748	95 17 58	2732
	Aldebaran	E.	107 54 43	2863	106 21 37	2847	104 48 10	2830	103 14 21	2813
20	Sun	W.	124 38 55	3014	126 8 51	2995	127 39 10	2976	129 9 53	2958
	Antares	W.	84 0 59	2668	85 38 22	2651	87 16 8	2633	88 54 18	2616
	Venus	W.	82 9 54	3079	83 38 29	3060	85 7 28	3040	86 36 51	3022
	α Arietis	E.	64 50 49	2726	63 14 44	2710	61 38 18	2695	60 1 32	2680
	Jupiter	E.	87 14 34	2649	85 36 45	2632	83 58 33	2615	82 19 58	2597
	Aldebaran	E.	95 19 44	2728	93 43 41	2710	92 7 14	2692	90 30 24	2675
21	Antares	W.	97 11 5	2527	98 51 40	2510	100 32 39	2492	102 14 3	2475
	Venus	W.	94 9 43	2924	95 41 31	2905	97 13 43	2886	98 46 20	2867
	α Aquilæ	W.	54 9 4	3951	55 21 32	3876	56 35 16	3805	57 50 13	3740
	α Arietis	E.	51 52 35	2606	50 13 48	2593	48 34 43	2579	46 55 19	2566
	Jupiter	E.	74 1 4	2510	72 20 5	2492	70 38 41	2475	68 56 53	2458
	Aldebaran	E.	82 20 19	2588	80 41 7	2571	79 1 32	2554	77 21 34	2538

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III^{h}.	P. L. of Diff.	VI^{h}.	P. L. of Diff.	IX^{h}.	P. L. of Diff.
22	α Aquilæ	W.	59° 6′ 18″	3677	60° 23′ 29″	3619	61° 41′ 43″	3564	63° 0′ 57″	3513
	α Arietis	E.	45 15 38	2555	43 35 41	2543	41 55 28	2534	40 15 2	2525
	JUPITER	E.	67 14 41	2441	65 32 5	2424	63 49 5	2408	62 5 41	2391
	Aldebaran	E.	75 41 13	2521	74 0 29	2504	72 19 22	2489	70 37 53	2473
23	α Aquilæ	W.	69 50 26	3296	71 14 42	3260	72 39 40	3227	74 5 17	3197
	Fomalhaut	W.	38 32 50	2859	40 6 2	2805	41 40 23	2757	43 15 47	2713
	JUPITER	E.	53 22 58	2314	51 37 19	2300	49 51 19	2286	48 4 59	2272
	Aldebaran	E.	62 5 9	2402	60 21 37	2389	58 37 46	2378	56 53 39	2366
24	α Aquilæ	W.	81 21 48	3072	82 50 32	3053	84 19 39	3036	85 49 7	3022
	Fomalhaut	W.	51 26 3	2540	53 6 21	2513	54 47 16	2488	56 28 46	2465
	JUPITER	E.	39 8 42	2216	37 20 38	2207	35 32 21	2198	33 43 51	2192
	Aldebaran	E.	48 9 23	2323	46 23 57	2318	44 38 24	2314	42 52 45	2313
	Pollux	E.	91 20 15	2214	89 32 8	2202	87 43 44	2191	85 55 3	2180
25	α Aquilæ	W.	93 20 14	2977	94 50 56	2973	96 21 42	2973	97 52 29	2975
	Fomalhaut	W.	65 3 43	2373	66 47 56	2359	68 32 30	2346	70 17 22	2335
	α Pegasi	W.	45 39 5	2793	47 13 42	2747	48 49 19	2706	50 25 51	2669
	Pollux	E.	76 47 44	2134	74 57 36	2126	73 7 16	2119	71 16 46	2113
26	Fomalhaut	W.	79 5 18	2295	80 51 25	2291	82 37 38	2287	84 23 56	2285
	α Pegasi	W.	58 39 21	2535	60 19 45	2517	62 0 35	2500	63 41 48	2486
	Pollux	E.	62 2 14	2091	60 11 1	2089	58 19 45	2087	56 28 26	2086
	Regulus	E.	98 42 51	2099	96 51 50	2096	95 0 45	2094	93 9 37	2093
27	Fomalhaut	W.	93 15 53	2287	95 2 11	2291	96 48 23	2296	98 34 29	2301
	α Pegasi	W.	72 12 2	2441	73 54 38	2437	75 37 20	2435	77 20 5	2433
	α Arietis	W.	28 43 21	2287	30 29 39	2269	32 16 24	2255	34 3 30	2243
	Pollux	E.	47 11 46	2090	45 20 31	2092	43 29 20	2096	41 38 14	2099
	Regulus	E.	83 53 48	2096	82 2 43	2099	80 11 42	2101	78 20 45	2105
28	α Pegasi	W.	85 53 48	2445	87 36 19	2450	89 18 43	2457	91 0 57	2464
	α Arietis	W.	43 2 1	2231	44 49 57	2221	46 37 53	2223	48 25 47	2225
	Regulus	E.	69 7 43	2132	67 17 33	2139	65 27 33	2146	63 37 44	2154
29	α Arietis	W.	57 23 52	2251	59 11 4	2258	60 58 6	2266	62 44 56	2274
	JUPITER	W.	35 28 12	2188	37 16 58	2195	39 5 33	2202	40 53 58	2210
	Aldebaran	W.	27 40 18	2456	29 22 33	2438	31 5 14	2423	32 48 16	2413
	Regulus	E.	54 31 48	2199	52 43 19	2209	50 55 5	2219	49 7 6	2231
	SUN	E.	122 14 8	2496	120 32 49	2507	118 51 45	2517	117 10 55	2527
30	α Arietis	W.	71 35 55	2320	73 21 25	2331	75 6 40	2342	76 51 39	2352
	JUPITER	W.	49 52 55	2255	51 40 1	2264	53 26 53	2275	55 13 29	2285
	Aldebaran	W.	41 25 42	2401	43 9 15	2403	44 52 45	2406	46 36 8	2412
	Regulus	E.	40 11 28	2291	38 25 15	2304	36 39 21	2317	34 53 46	2331
	SUN	E.	108 50 38	2585	107 11 23	2596	105 32 25	2610	103 53 44	2623
31	α Arietis	W.	85 32 36	2409	87 15 58	2421	88 59 3	2433	90 41 51	2444
	JUPITER	W.	64 2 35	2340	65 47 36	2352	67 32 20	2363	69 16 48	2375
	Aldebaran	W.	55 11 0	2448	56 53 27	2456	58 35 42	2465	60 17 44	2475
	SUN	E.	95 44 34	2686	94 7 35	2699	92 30 54	2712	90 54 30	2725

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
22	α Aquilæ	W.	64° 21′ 7″	3463	65° 42′ 12″	3418	67° 4′ 8″	3374	68° 26′ 54″	3334
	α Arietis	E.	38 34 23	2517	36 53 34	2512	35 12 37	2508	33 31 35	2507
	Jupiter	E.	60 21 54	2375	58 37 44	2359	56 53 11	2344	55 8 16	2328
	Aldebaran	E.	68 56 2	2458	67 13 49	2443	65 31 16	2429	63 48 22	2415
23	α Aquilæ	W.	75 31 30	3168	76 58 18	3140	78 25 39	3115	79 53 30	3093
	Fomalhaut	W.	44 52 9	2673	46 29 25	2635	48 7 32	2601	49 46 26	2569
	Jupiter	E.	46 18 19	2260	44 31 20	2248	42 44 4	2237	40 56 31	2226
	Aldebaran	E.	55 9 15	2355	53 24 36	2346	51 39 44	2337	49 54 39	2330
24	α Aquilæ	W.	87 18 53	3009	88 48 55	2997	90 19 11	2989	91 49 38	2981
	Fomalhaut	W.	58 10 49	2443	59 53 22	2423	61 36 24	2405	63 19 52	2389
	Jupiter	E.	31 55 12	2188	30 6 26	2184	28 17 34	2181	26 28 38	2178
	Aldebaran	E.	41 7 4	2312	39 21 22	2314	37 35 43	2318	35 50 10	2324
	Pollux	E.	84 6 5	2170	82 16 52	2159	80 27 23	2150	78 37 40	2141
25	α Aquilæ	W.	99 23 13	2978	100 53 53	2984	102 24 26	2992	103 54 49	3003
	Fomalhaut	W.	72 2 31	2324	73 47 55	2315	75 33 32	2308	77 19 20	2301
	α Pegasi	W.	52 3 12	2636	53 41 18	2607	55 20 4	2580	56 59 26	2556
	Pollux	E.	69 26 7	2107	67 35 19	2103	65 44 24	2098	63 53 22	2094
26	Fomalhaut	W.	86 10 18	2283	87 56 42	2283	89 43 7	2283	91 29 31	2285
	α Pegasi	W.	65 23 21	2473	67 5 12	2463	68 47 17	2455	70 29 34	2447
	Pollux	E.	54 37 6	2086	52 45 45	2086	50 54 24	2086	49 3 4	2088
	Regulus	E.	91 18 27	2093	89 27 17	2092	87 36 6	2093	85 44 56	2094
27	Fomalhaut	W.	100 20 27	2308	102 6 15	2315	103 51 53	2324	105 37 18	2333
	α Pegasi	W.	79 2 53	2433	80 45 41	2434	82 28 27	2436	84 11 10	2440
	α Arietis	W.	35 50 54	2235	37 38 30	2229	39 26 15	2225	41 14 6	2222
	Pollux	E.	39 47 14	2103	37 56 20	2109	36 5 34	2114	34 14 56	2120
	Regulus	E.	76 29 54	2109	74 39 9	2115	72 48 32	2120	70 58 3	2126
28	α Pegasi	W.	92 43 1	2473	94 24 52	2483	96 6 29	2494	97 47 51	2506
	α Arietis	W.	50 13 37	2229	52 1 22	2233	53 49 0	2239	55 36 30	2244
	Regulus	E.	61 48 7	2162	59 58 42	2170	58 9 30	2180	56 20 32	2189
29	α Arietis	W.	64 31 34	2282	66 18 0	2291	68 4 12	2300	69 50 11	2311
	Jupiter	W.	42 42 11	2318	44 30 12	2327	46 18 0	2336	48 5 34	2345
	Aldebaran	W.	34 31 32	2405	36 14 59	2402	37 58 31	2400	39 42 6	2399
	Regulus	E.	47 19 24	2241	45 31 58	2253	43 44 50	2266	41 58 0	2278
	Sun	E.	115 30 20	2539	113 50 1	2550	112 9 57	2561	110 30 9	2574
30	α Arietis	W.	78 36 23	2363	80 20 51	2375	82 5 2	2386	83 48 57	2397
	Jupiter	W.	56 59 50	2296	58 45 55	2307	60 31 45	2318	62 17 18	2329
	Aldebaran	W.	48 19 25	2419	50 2 33	2424	51 45 33	2432	53 28 22	2440
	Regulus	E.	33 8 32	2346	31 23 39	2360	29 39 7	2376	27 54 58	2392
	Sun	E.	102 15 20	2635	100 37 13	2648	98 59 23	2660	97 21 50	2673
31	α Arietis	W.	92 24 23	2457	94 6 37	2468	95 48 35	2481	97 30 15	2496
	Jupiter	W.	71 0 59	2386	72 44 54	2397	74 28 33	2408	76 11 56	2420
	Aldebaran	W.	61 59 33	2484	63 41 9	2494	65 22 31	2504	67 3 39	2514
	Sun	E.	89 18 24	2738	87 42 35	2750	86 7 2	2763	84 31 46	2776

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	14 27 36.17	9.813	S. 14 36 7.2	−47.83	16 9.89	67.00	16 20.45	0.043
Thur.	2	14 31 32.10	9.848	14 55 8.0	47.23	16 10.14	67.11	16 21.08	0.009
Frid.	3	14 35 28.87	9.883	15 13 54.4	46.62	16 10.37	67.23	16 20.86	0.026
Sat.	4	14 39 26.47	9.918	15 32 25.9	−45.99	16 10.61	67.35	16 19.82	0.061
SUN.	5	14 43 24.92	9.953	15 50 42.0	45.35	16 10.85	67.46	16 17.93	0.096
Mon.	6	14 47 24.22	9.988	16 8 42.5	44.68	16 11.08	67.58	16 15.20	0.131
Tues.	7	14 51 24.36	10.024	16 26 26.8	−44.00	16 11.31	67.70	16 11.62	0.167
Wed.	8	14 55 25.37	10.059	16 43 54.5	43.30	16 11.54	67.82	16 7.17	0.202
Thur.	9	14 59 27.21	10.095	17 1 5.1	42.58	16 11.77	67.94	16 1.90	0.238
Frid.	10	15 3 29.92	10.130	17 17 58.3	−41.84	16 12.00	68.06	15 55.76	0.273
Sat.	11	15 7 33.46	10.165	17 34 33.6	41.09	16 12.23	68.18	15 48.80	0.308
SUN.	12	15 11 37.86	10.200	17 50 50.6	40.32	16 12.45	68.29	15 40.99	0.343
Mon.	13	15 15 43.08	10.235	18 6 48.9	−39.53	16 12.68	68.41	15 32.35	0.378
Tues.	14	15 19 49.15	10.269	18 22 28.1	38.73	16 12.90	68.53	15 22.86	0.412
Wed.	15	15 23 56.04	10.303	18 37 47.8	37.91	16 13.11	68.65	15 12.55	0.446
Thur.	16	15 28 3.76	10.338	18 52 47.6	−37.07	16 13.33	68.77	15 1.42	0.481
Frid.	17	15 32 12.30	10.372	19 7 27.1	36.22	16 13.54	68.88	14 49.47	0.515
Sat.	18	15 36 21.66	10.405	19 21 46.0	35.35	16 13.75	69.00	14 36.70	0.549
SUN.	19	15 40 31.82	10.440	19 35 43.9	−34.47	16 13.95	69.11	14 23.14	0.582
Mon.	20	15 44 42.78	10.474	19 49 20.4	33.57	16 14.15	69.22	14 8.78	0.615
Tues.	21	15 48 54.55	10.507	20 2 35.2	32.66	16 14.34	69.33	13 53.60	0.648
Wed.	22	15 53 7.10	10.540	20 15 28.0	−31.73	16 14.53	69.44	13 37.66	0.681
Thur.	23	15 57 20.44	10.572	20 27 58.4	30.79	16 14.72	69.55	13 20.92	0.713
Frid.	24	16 1 34.54	10.602	20 40 6.1	29.84	16 14.90	69.65	13 3.42	0.745
Sat.	25	16 5 49.41	10.635	20 51 50.8	−28.88	16 15.07	69.76	12 45.16	0.776
SUN.	26	16 10 5.04	10.667	21 3 12.2	27.90	16 15.24	69.86	12 26.14	0.808
Mon.	27	16 14 21.41	10.698	21 14 9.8	26.90	16 15.40	69.95	12 6.38	0.839
Tues.	28	16 18 38.52	10.727	21 24 43.5	−25.90	16 15.56	70.05	11 45.89	0.868
Wed.	29	16 22 56.33	10.757	21 34 52.9	24.88	16 15.71	70.14	11 24.70	0.898
Thur.	30	16 27 14.84	10.785	21 44 37.7	23.85	16 15.86	70.23	11 2.81	0.926
Frid.	31	16 31 34.02	10.813	S. 21 53 57.6	−22.80	16 16.01	70.32	10 40.24	0.954

NOTE.—The mean time of semidiameter passing may be found by subtracting 0ˢ.19 from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	14 27 38.84	9.814	S. 14 36 20.2	−47.82	16 20.46	0.043	14 43 59.30
Thur.	2	14 31 34.78	9.848	14 55 20.9	47.23	16 21.08	0.008	14 47 55.86
Frid.	3	14 35 31.56	9.883	15 14 7.1	46.61	16 20.85	0.027	14 51 52.41
Sat.	4	14 39 29.17	9.918	15 32 38.4	−45.98	16 19.80	0.061	14 55 48.97
SUN.	5	14 43 27.62	9.953	15 50 54.3	45.34	16 17.90	0.097	14 59 45.52
Mon.	6	14 47 26.92	9.988	16 8 54.6	44.67	16 15.16	0.132	15 3 42.08
Tues.	7	14 51 27.07	10.024	16 26 38.6	−43.99	16 11.57	0.168	15 7 38.64
Wed.	8	14 55 28.07	10.059	16 44 6.0	43.29	16 7.12	0.203	15 11 35.19
Thur.	9	14 59 29.91	10.095	17 1 16.4	42.57	16 1.84	0.238	15 15 31.75
Frid.	10	15 3 32.61	10.130	17 18 9.4	−41.83	15 55.69	0.273	15 19 28.30
Sat.	11	15 7 36.14	10.165	17 34 44.4	41.08	15 48.72	0.308	15 23 24.86
SUN.	12	15 11 40.52	10.200	17 51 1.1	40.31	15 40.90	0.343	15 27 21.42
Mon.	13	15 15 45.73	10.235	18 6 59.1	−39.52	15 32.25	0.378	15 31 17.98
Tues.	14	15 19 51.78	10.269	18 22 38.0	38.71	15 22.75	0.413	15 35 14.53
Wed.	15	15 23 58.65	10.303	18 37 57.4	37.89	15 12.44	0.446	15 39 11.09
Thur.	16	15 28 6.35	10.338	18 52 56.8	−37.05	15 1.30	0.481	15 43 7.65
Frid.	17	15 32 14.86	10.372	19 7 36.0	36.20	14 49.34	0.515	15 47 4.20
Sat.	18	15 36 24.19	10.405	19 21 54.6	35.34	14 36.57	0.549	15 51 0.76
SUN.	19	15 40 34.32	10.439	19 35 52.1	−34.45	14 23.00	0.582	15 54 57.32
Mon.	20	15 44 45.25	10.472	19 49 28.3	33.55	14 8.63	0.616	15 58 53.88
Tues.	21	15 48 56.98	10.505	20 2 42.7	32.64	13 53.45	0.649	16 2 50.43
Wed.	22	15 53 9.49	10.538	20 15 35.2	−31.72	13 37.50	0.681	16 6 46.99
Thur.	23	15 57 22.79	10.570	20 28 5.2	30.78	13 20.76	0.713	16 10 43.55
Frid.	24	16 1 36.85	10.602	20 40 12.6	29.83	13 3.26	0.745	16 14 40.11
Sat.	25	16 5 51.67	10.634	20 51 56.9	−28.86	12 44.99	0.777	16 18 36.66
SUN.	26	16 10 7.25	10.665	21 3 17.9	27.88	12 25.97	0.808	16 22 33.22
Mon.	27	16 14 23.57	10.695	21 14 15.2	26.89	12 6.21	0.839	16 26 29.78
Tues.	28	16 18 40.62	10.725	21 24 48.5	−25.88	11 45.72	0.868	16 30 26.34
Wed.	29	16 22 58.37	10.754	21 34 57.6	24.86	11 24.53	0.898	16 34 22.90
Thur.	30	16 27 16.82	10.783	21 44 42.0	23.83	11 2.64	0.926	16 38 19.46
Frid.	31	16 31 35.94	10.810	S. 21 54 1.6	−22.80	10 40.07	0.954	16 42 16.01

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour,
+ 9s.8565.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	305	219 18 58.9	18 23.5	150.26	+ 0.38	9.9964508	−45.2	9 14 29.61
2	306	220 19 6.3	18 30.7	150.35	0.31	9.9963429	44.8	9 10 33.70
3	307	221 19 15.8	18 40.1	150.44	0.22	9.9962359	44.4	9 6 37.79
4	308	222 19 27.4	18 51.5	150.53	+ 0.11	9.9961298	−44.0	9 2 41.88
5	309	223 19 41.1	19 5.1	150.61	− 0.02	9.9960245	43.7	8 58 45.97
6	310	224 19 56.8	19 20.6	150.69	0.15	9.9959199	43.5	8 54 50.06
7	311	225 20 14.3	19 38.0	150.77	− 0.28	9.9958159	−43.2	8 50 54.15
8	312	226 20 33.6	19 57.1	150.84	0.40	9.9957126	42.9	8 46 58.24
9	313	227 20 54.7	20 18.0	150.91	0.51	9.9956099	42.6	8 43 2.33
10	314	228 21 17.5	20 40.7	150.98	− 0.61	9.9955079	−42.3	8 39 6.42
11	315	229 21 41.9	21 4.9	151.05	0.68	9.9954066	41.9	8 35 10.51
12	316	230 22 7.8	21 30.7	151.11	0.72	9.9953062	41.6	8 31 14.60
13	317	231 22 35.1	21 57.8	151.16	− 0.73	9.9952068	−41.2	8 27 18.68
14	318	232 23 3.7	22 26.2	151.22	0.71	9.9951084	40.8	8 23 22.78
15	319	233 23 33.6	22 56.0	151.28	0.66	9.9950112	40.2	8 19 26.86
16	320	234 24 4.9	23 27.1	151.33	− 0.59	9.9949155	−39.6	8 15 30.95
17	321	235 24 37.4	23 59.4	151.38	0.49	9.9948213	38.9	8 11 35.05
18	322	236 25 11.2	24 33.1	151.43	0.37	9.9947288	38.2	8 7 39.13
19	323	237 25 46.2	25 7.9	151.48	− 0.24	9.9946381	−37.4	8 3 43.22
20	324	238 26 22.4	25 43.9	151.54	− 0.11	9.9945495	36.5	7 59 47.30
21	325	239 26 59.9	26 21.3	151.59	+ 0.02	9.9944630	35.6	7 55 51.38
22	326	240 27 38.7	26 59.9	151.64	+ 0.14	9.9943787	−34.6	7 51 55.48
23	327	241 28 18.7	27 39.7	151.69	0.24	9.9942967	33.7	7 47 59.57
24	328	242 29 0.0	28 20.8	151.75	0.32	9.9942170	32.7	7 44 3.66
25	329	243 29 42.7	29 3.4	151.81	+ 0.38	9.9941396	−31.8	7 40 7.75
26	330	244 30 26.9	29 47.4	151.87	0.41	9.9940645	30.8	7 36 11.84
27	331	245 31 12.5	30 32.8	151.93	0.41	9.9939917	29.9	7 32 15.92
28	332	246 31 59.6	31 19.7	151.99	+ 0.37	9.9939212	−28.9	7 28 20.01
29	333	247 32 48.1	32 8.0	152.05	0.30	9.9938529	28.0	7 24 24.10
30	334	248 33 38.1	32 57.9	152.11	0.21	9.9937866	27.2	7 20 28.18
31	335	249 34 29.5	33 49.1	152.17	+ 0.11	9.9937222	−26.6	7 16 32.28

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 53.4	15 48.2	58 12.5	−1.60	57 53.2	−1.58	19 16.7	2.04	22.6
2	15 43.1	15 38.1	57 34.5	1.55	57 16.1	1.51	20 3.7	1.88	23.6
3	15 33.2	15 28.6	56 58.3	1.45	56 41.2	1.40	20 47.6	1.79	24.6
4	15 24.1	15 19.8	56 24.7	−1.34	56 9.0	−1.28	21 30.0	1.74	25.6
5	15 15.7	15 11.8	55 54.0	1.22	55 39.7	1.16	22 11.9	1.75	26.6
6	15 8.1	15 4.7	55 26.2	1.09	55 13.5	1.03	22 54.5	1.80	27.6
7	15 1.4	14 58.3	55 1.4	−0.97	54 50.2	−0.90	23 38.8	1.88	28.6
8	14 55.5	14 52.9	54 39.8	0.83	54 30.3	0.75	δ		0.0
9	14 50.6	14 48.7	54 21.9	0.65	54 14.7	0.55	0 24.9	1.97	1.0
10	14 47.0	14 45.8	54 8.6	−0.45	54 4.0	−0.32	1 13.4	2.06	2.0
11	14 44.9	14 44.5	54 0.9	−0.19	53 59.5	−0.04	2 3.9	2.13	3.0
12	14 44.6	14 45.3	53 59.9	+0.12	54 2.3	+0.29	2 55.2	2.14	4.0
13	14 46.5	14 48.4	54 6.8	+0.47	54 13.6	+0.66	3 46.4	2.11	5.0
14	14 50.8	14 54.0	54 22.6	0.85	54 34.1	1.06	4 36.2	2.04	6.0
15	14 57.7	15 2.2	54 48.0	1.26	55 4.3	1.46	5 24.1	1.96	7.0
16	15 7.3	15 13.0	55 23.0	+1.66	55 44.1	+1.85	6 10.4	1.89	8.0
17	15 19.4	15 26.2	56 7.4	2.02	56 32.6	2.17	6 55.1	1.85	9.0
18	15 33.5	15 41.2	56 59.5	2.30	57 27.7	2.38	7 39.3	1.85	10.0
19	15 49.1	15 57.1	57 56.7	+2.43	58 26.1	+2.43	8 24.2	1.90	11.0
20	16 5.0	16 12.7	58 55.1	2.38	59 23.2	2.27	9 11.2	2.02	12.0
21	16 19.9	16 26.4	59 49.6	2.10	60 13.7	1.88	10 1.9	2.20	13.0
22	16 32.1	16 36.8	60 34.6	+1.58	60 51.7	+1.25	10 57.3	2.43	14.0
23	16 40.3	16 42.5	61 4.6	0.88	61 12.8	+0.48	11 58.4	2.65	15.0
24	16 43.4	16 43.0	61 16.2	+0.07	61 14.5	−0.34	13 4.1	2.80	16.0
25	16 41.2	16 38.3	61 8.1	−0.72	60 57.2	−1.08	14 11.7	2.80	17.0
26	16 34.2	16 29.2	60 42.3	1.38	60 24.0	1.64	15 17.2	2.64	18.0
27	16 23.5	16 17.1	60 2.9	1.85	59 39.6	2.00	16 17.8	2.40	19.0
28	16 10.4	16 3.4	59 14.8	−2.10	58 49.3	−2.15	17 12.4	2.15	20 0
29	15 56.4	15 49.4	58 23.3	2.15	57 57.6	2.12	18 1.6	1.96	21.0
30	15 42.5	15 36.0	57 32.5	2.05	57 8.4	1.96	18 46.9	1.82	22.0
31	15 29.7	15 23.8	56 45.4	−1.86	56 23.7	−1.74	19 29.6	1.75	23.0

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 21 23.39	2.2769	N.20 24 30.4	11.827
1	9 23 39.77	2.2691	20 12 37.8	11.927
2	9 25 55.68	2.2613	20 0 39.2	12.025
3	9 28 11.13	2.2536	19 48 34.8	12.121
4	9 30 26.11	2.2459	19 36 24.7	12.215
5	9 32 40.63	2.2382	19 24 9.0	12.307
6	9 34 54.69	2.2306	19 11 47.8	12.398
7	9 37 8.30	2.2230	18 59 21.2	12.487
8	9 39 21.45	2.2154	18 46 49.3	12.575
9	9 41 34.15	2.2080	18 34 12.2	12.661
10	9 43 46.41	2.2006	18 21 30.0	12.746
11	9 45 58.23	2.1932	18 8 42.7	12.828
12	9 48 9.60	2.1859	17 55 50.6	12.908
13	9 50 20.54	2.1788	17 42 53.7	12.988
14	9 52 31.06	2.1717	17 29 52.0	13.067
15	9 54 41.15	2.1647	17 16 45.7	13.143
16	9 56 50.82	2.1577	17 3 34.9	13.217
17	9 59 0.07	2.1507	16 50 19.7	13.290
18	10 1 8.90	2.1438	16 37 0.1	13.362
19	10 3 17.32	2.1370	16 23 36.2	13.432
20	10 5 25.34	2.1304	16 10 8.2	13.500
21	10 7 32.97	2.1238	15 56 36.2	13.567
22	10 9 40.20	2.1172	15 43 0.2	13.633
23	10 11 47.03	2.1106	N.15 29 20.2	13.698

THURSDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 13 53.47	2.1042	N.15 15 36.4	13.761
1	10 15 59.53	2.0979	15 1 48.9	13.822
2	10 18 5.22	2.0916	14 47 57.8	13.881
3	10 20 10.53	2.0854	14 34 3.2	13.939
4	10 22 15.47	2.0793	14 20 5.1	13.996
5	10 24 20.05	2.0733	14 6 3.7	14.051
6	10 26 24.27	2.0673	13 51 59.0	14.105
7	10 28 28.13	2.0615	13 37 51.1	14.157
8	10 30 31.65	2.0557	13 23 40.1	14.209
9	10 32 34.82	2.0500	13 9 26.0	14.259
10	10 34 37.65	2.0444	12 55 9.0	14.307
11	10 36 40.15	2.0388	12 40 49.1	14.354
12	10 38 42.31	2.0333	12 26 26.5	14.399
13	10 40 44.15	2.0280	12 12 1.2	14.444
14	10 42 45.67	2.0227	11 57 33.2	14.488
15	10 44 46.88	2.0176	11 43 2.6	14.530
16	10 46 47.78	2.0125	11 28 29.6	14.570
17	10 48 48.38	2.0074	11 13 54.2	14.610
18	10 50 48.67	2.0024	10 59 16.4	14.648
19	10 52 48.67	1.9976	10 44 36.4	14.685
20	10 54 48.38	1.9928	10 29 54.2	14.720
21	10 56 47.81	1.9882	10 15 10.0	14.754
22	10 58 46.96	1.9836	10 0 23.8	14.787
23	11 0 45.84	1.9790	9 45 35.6	14.819
24	11 2 44.44	1.9745	N. 9 30 45.5	14.850

FRIDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 2 44.44	1.9745	N. 9 30 45.5	14.850
1	11 4 42.76	1.9702	9 15 53.6	14.879
2	11 6 40.87	1.9660	9 1 0.0	14.907
3	11 8 38.70	1.9618	8 46 4.8	14.934
4	11 10 36.28	1.9577	8 31 8.0	14.960
5	11 12 33.62	1.9537	8 16 9.6	14.985
6	11 14 30.72	1.9497	8 1 9.8	15.007
7	11 16 27.59	1.9459	7 46 8.7	15.029
8	11 18 24.23	1.9422	7 31 6.3	15.051
9	11 20 20.65	1.9386	7 16 2.6	15.072
10	11 22 16.86	1.9350	7 0 57.7	15.091
11	11 24 12.85	1.9314	6 45 51.7	15.108
12	11 26 8.63	1.9280	6 30 44.7	15.124
13	11 28 4.21	1.9247	6 15 36.8	15.140
14	11 29 59.60	1.9215	6 0 27.9	15.155
15	11 31 54.79	1.9183	5 45 18.2	15.168
16	11 33 49.79	1.9152	5 30 7.8	15.180
17	11 35 44.62	1.9123	5 14 56.6	15.192
18	11 37 39.27	1.9094	4 59 44.8	15.202
19	11 39 33.75	1.9066	4 44 32.4	15.211
20	11 41 28.06	1.9038	4 29 19.5	15.218
21	11 43 22.21	1.9012	4 14 6.2	15.225
22	11 45 16.20	1.8986	3 58 52.5	15.232
23	11 47 10.04	1.8962	N. 3 43 38.4	15.237

SATURDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 49 3.74	1.8938	N. 3 28 24.1	15.240
1	11 50 57.30	1.8915	3 13 9.6	15.242
2	11 52 50.72	1.8892	2 57 55.0	15.244
3	11 54 44.00	1.8870	2 42 40.3	15.245
4	11 56 37.16	1.8850	2 27 25.6	15.245
5	11 58 30.20	1.8831	2 12 10.9	15.244
6	12 0 23.13	1.8812	1 56 56.3	15.242
7	12 2 15.94	1.8793	1 41 41.9	15.238
8	12 4 8.64	1.8776	1 26 27.7	15.234
9	12 6 1.25	1.8760	1 11 13.8	15.228
10	12 7 53.76	1.8743	0 56 0.3	15.222
11	12 9 46.17	1.8727	0 40 47.1	15.216
12	12 11 38.49	1.8713	0 25 34.4	15.208
13	12 13 30.73	1.8700	N. 0 10 22.2	15.198
14	12 15 22.89	1.8687	S. 0 4 49.4	15.187
15	12 17 14.98	1.8676	0 20 0.3	15.176
16	12 19 7.00	1.8665	0 35 10.5	15.164
17	12 20 58.96	1.8655	0 50 20.0	15.152
18	12 22 50.86	1.8645	1 5 28.7	15.138
19	12 24 42.70	1.8636	1 20 36.5	15.123
20	12 26 34.49	1.8628	1 35 43.4	15.107
21	12 28 26.24	1.8622	1 50 49.3	15.090
22	12 30 17.95	1.8615	2 5 54.2	15.072
23	12 32 9.62	1.8609	2 20 58.0	15.053
24	12 34 1.26	1.8604	S. 2 36 0.6	15.033

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 34 1.26	1.8604	S. 2 36 0.6	15.033
1	12 35 52.87	1.8600	2 51 2.0	15.013
2	12 37 44.46	1.8596	3 6 2.2	14.992
3	12 39 36.03	1.8593	3 21 1.1	14.970
4	12 41 27.58	1.8592	3 35 58.6	14.946
5	12 43 19.13	1.8591	3 50 54.6	14.921
6	12 45 10.67	1.8590	4 5 49.1	14.896
7	12 47 2.21	1.8590	4 20 42.1	14.870
8	12 48 53.75	1.8591	4 35 33.5	14.842
9	12 50 45.30	1.8592	4 50 23.2	14.814
10	12 52 36.86	1.8595	5 5 11.2	14.786
11	12 54 28.44	1.8598	5 19 57.5	14.757
12	12 56 20.03	1.8601	5 34 42.0	14.726
13	12 58 11.65	1.8606	5 49 24.6	14.694
14	13 0 3.30	1.8611	6 4 5.3	14.661
15	13 1 54.98	1.8617	6 18 43.9	14.627
16	13 3 46.70	1.8623	6 33 20.5	14.593
17	13 5 38.46	1.8631	6 47 55.1	14.558
18	13 7 30.27	1.8639	7 2 27.5	14.522
19	13 9 22.13	1.8647	7 16 57.7	14.485
20	13 11 14.04	1.8656	7 31 25.7	14.447
21	13 13 6.00	1.8666	7 45 51.3	14.408
22	13 14 58.03	1.8677	8 0 14.6	14.368
23	13 16 50.12	1.8688	S. 8 14 35.5	14.327

MONDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 18 42.28	1.8699	S. 8 28 53.9	14.286
1	13 20 34.51	1.8712	8 43 9.8	14.243
2	13 22 26.82	1.8725	8 57 23.1	14.199
3	13 24 19.21	1.8738	9 11 33.7	14.154
4	13 26 11.68	1.8752	9 25 41.6	14.109
5	13 28 4.24	1.8767	9 39 46.8	14.064
6	13 29 56.89	1.8782	9 53 49.3	14.017
7	13 31 49.63	1.8799	10 7 48.9	13.969
8	13 33 42.47	1.8816	10 21 45.6	13.920
9	13 35 35.42	1.8833	10 35 39.3	13.870
10	13 37 28.47	1.8851	10 49 30.0	13.819
11	13 39 21.63	1.8870	11 3 17.6	13.768
12	13 41 14.91	1.8889	11 17 2.2	13.716
13	13 43 8.30	1.8908	11 30 43.6	13.663
14	13 45 1.81	1.8928	11 44 21.8	13.608
15	13 46 55.44	1.8948	11 57 56.6	13.553
16	13 48 49.19	1.8969	12 11 28.1	13.497
17	13 50 43.07	1.8992	12 24 56.2	13.440
18	13 52 37.09	1.9014	12 38 20.9	13.382
19	13 54 31.24	1.9037	12 51 42.1	13.323
20	13 56 25.53	1.9060	13 4 59.7	13.263
21	13 58 19.96	1.9083	13 18 13.7	13.203
22	14 0 14.53	1.9107	13 31 24.1	13.142
23	14 2 9.25	1.9132	13 44 30.8	13.080
24	14 4 4.12	1.9157	S. 13 57 33.7	13.017

TUESDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 4 4.12	1.9157	S. 13 57 33.7	13.017
1	14 5 59.14	1.9183	14 10 32.8	12.952
2	14 7 54.32	1.9210	14 23 28.0	12.887
3	14 9 49.66	1.9237	14 36 19.3	12.822
4	14 11 45.16	1.9264	14 49 6.6	12.755
5	14 13 40.83	1.9292	15 1 49.9	12.687
6	14 15 36.66	1.9319	15 14 29.1	12.619
7	14 17 32.66	1.9347	15 27 4.2	12.550
8	14 19 28.83	1.9377	15 39 35.1	12.479
9	14 21 25.18	1.9407	15 52 1.7	12.408
10	14 23 21.71	1.9437	16 4 24.0	12.336
11	14 25 18.42	1.9466	16 16 42.0	12.263
12	14 27 15.30	1.9496	16 28 55.6	12.189
13	14 29 12.37	1.9527	16 41 4.7	12.114
14	14 31 9.63	1.9558	16 53 9.3	12.038
15	14 33 7.07	1.9589	17 5 9.3	11.962
16	14 35 4.70	1.9622	17 17 4.7	11.885
17	14 37 2.53	1.9654	17 28 55.5	11.807
18	14 39 0.55	1.9687	17 40 41.5	11.727
19	14 40 58.77	1.9719	17 52 22.7	11.647
20	14 42 57.18	1.9752	18 3 59.1	11.566
21	14 44 55.79	1.9786	18 15 30.6	11.484
22	14 46 54.61	1.9820	18 26 57.2	11.402
23	14 48 53.63	1.9853	S. 18 38 18.8	11.318

WEDNESDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 50 52.85	1.9887	S. 18 49 35.3	11.233
1	14 52 52.28	1.9922	19 0 46.7	11.148
2	14 54 51.92	1.9957	19 11 53.0	11.063
3	14 56 51.76	1.9992	19 22 54.2	10.976
4	14 58 51.82	2.0027	19 33 50.1	10.887
5	15 0 52.09	2.0062	19 44 40.6	10.797
6	15 2 52.57	2.0098	19 55 25.7	10.707
7	15 4 53.27	2.0134	20 6 5.4	10.617
8	15 6 54.18	2.0169	20 16 39.7	10.526
9	15 8 55.30	2.0205	20 27 8.5	10.433
10	15 10 56.64	2.0242	20 37 31.7	10.340
11	15 12 58.20	2.0278	20 47 49.3	10.247
12	15 14 59.98	2.0315	20 58 1.3	10.152
13	15 17 1.98	2.0352	21 8 7.5	10.055
14	15 19 4.20	2.0387	21 18 7.9	9.959
15	15 21 6.63	2.0423	21 28 2.6	9.862
16	15 23 9.28	2.0460	21 37 51.4	9.764
17	15 25 12.15	2.0498	21 47 34.3	9.665
18	15 27 15.25	2.0535	21 57 11.2	9.565
19	15 29 18.57	2.0571	22 6 42.1	9.464
20	15 31 22.10	2.0608	22 16 6.9	9.363
21	15 33 25.86	2.0645	22 25 25.6	9.261
22	15 35 29.84	2.0682	22 34 38.2	9.157
23	15 37 34.04	2.0718	22 43 44.5	9.053
24	15 39 38.46	2.0755	S. 22 52 44.6	8.949

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 39 38.46	2.0755	S.22 52 44.6	8.949
1	15 41 43.10	2.0791	23 1 38.4	8.843
2	15 43 47.96	2.0827	23 10 25.8	8.737
3	15 45 53.03	2.0863	23 19 6.8	8.630
4	15 47 58.32	2.0900	23 27 41.4	8.522
5	15 50 3.83	2.0937	23 36 9.5	8.413
6	15 52 9.56	2.0973	23 44 31.0	8.303
7	15 54 15.50	2.1008	23 52 45.9	8.193
8	15 56 21.66	2.1044	24 0 54.2	8.083
9	15 58 28.03	2.1079	24 8 55.9	7.972
10	16 0 34.61	2.1114	24 16 50.9	7.860
11	16 2 41.40	2.1150	24 24 39.1	7.746
12	16 4 48.41	2.1186	24 32 20.4	7.632
13	16 6 55.63	2.1220	24 39 54.9	7.517
14	16 9 3.05	2.1253	24 47 22.5	7.402
15	16 11 10.67	2.1287	24 54 43.2	7.287
16	16 13 18.50	2.1321	25 1 56.9	7.170
17	16 15 26.53	2.1354	25 9 3.6	7.053
18	16 17 34.75	2.1387	25 16 3.2	6.935
19	16 19 43.17	2.1420	25 22 55.8	6.817
20	16 21 51.79	2.1453	25 29 41.2	6.697
21	16 24 0.61	2.1486	25 36 19.4	6.577
22	16 26 9.62	2.1517	25 42 50.4	6.456
23	16 28 18.81	2.1548	S.25 49 14.1	6.335

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 30 28.19	2.1579	S.25 55 30.6	6.214
1	16 32 37.76	2.1610	26 1 39.8	6.092
2	16 34 47.51	2.1639	26 7 41.6	5.968
3	16 36 57.43	2.1668	26 13 35.9	5.843
4	16 39 7.53	2.1697	26 19 22.8	5.719
5	16 41 17.80	2.1727	26 25 2.2	5.595
6	16 43 28.25	2.1756	26 30 34.2	5.470
7	16 45 38.87	2.1783	26 35 58.6	5.344
8	16 47 49.65	2.1809	26 41 15.4	5.218
9	16 50 0.58	2.1835	26 46 24.7	5.091
10	16 52 11.67	2.1861	26 51 26.3	4.963
11	16 54 22.92	2.1887	26 56 20.2	4.835
12	16 56 34.32	2.1912	27 1 6.5	4.707
13	16 58 45.87	2.1937	27 5 45.0	4.578
14	17 0 57.56	2.1960	27 10 15.8	4.448
15	17 3 9.39	2.1983	27 14 38.8	4.318
16	17 5 21.36	2.2006	27 18 54.0	4.188
17	17 7 33.46	2.2028	27 23 1.4	4.058
18	17 9 45.70	2.2050	27 27 0.9	3.927
19	17 11 58.06	2.2070	27 30 52.6	3.795
20	17 14 10.54	2.2090	27 34 36.3	3.663
21	17 16 23.14	2.2109	27 38 12.1	3.531
22	17 18 35.85	2.2128	27 41 40.0	3.398
23	17 20 48.67	2.2146	27 44 59.9	3.265
24	17 23 1.60	2.2163	S.27 48 11.8	3.132

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 23 1.60	2.2163	S.27 48 11.8	3.132
1	17 25 14.63	2.2179	27 51 15.7	2.998
2	17 27 27.75	2.2195	27 54 11.6	2.864
3	17 29 40.97	2.2211	27 56 59.4	2.730
4	17 31 54.28	2.2225	27 59 39.2	2.596
5	17 34 7.67	2.2238	28 2 10.9	2.461
6	17 36 21.13	2.2250	28 4 34.5	2.326
7	17 38 34.67	2.2262	28 6 50.0	2.191
8	17 40 48.28	2.2274	28 8 57.4	2.055
9	17 43 1.96	2.2285	28 10 56.6	1.919
10	17 45 15.70	2.2295	28 12 47.7	1.783
11	17 47 29.50	2.2304	28 14 30.6	1.647
12	17 49 43.35	2.2312	28 16 5.3	1.510
13	17 51 57.25	2.2320	28 17 31.8	1.374
14	17 54 11.19	2.2327	28 18 50.2	1.238
15	17 56 25.17	2.2333	28 20 0.4	1.102
16	17 58 39.18	2.2338	28 21 2.4	0.965
17	18 0 53.22	2.2343	28 21 56.2	0.828
18	18 3 7.29	2.2347	28 22 41.8	0.692
19	18 5 21.38	2.2349	28 23 19.2	0.555
20	18 7 35.48	2.2351	28 23 48.4	0.417
21	18 9 49.59	2.2352	28 24 9.3	0.280
22	18 12 3.71	2.2353	28 24 22.0	0.143
23	18 14 17.83	2.2352	S.28 24 26.5	– 0.006

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 16 31.94	2.2351	S.28 24 22.7	+ 0.131
1	18 18 46.04	2.2349	28 24 10.7	0.268
2	18 21 0.13	2.2347	28 23 50.5	0.405
3	18 23 14.21	2.2345	28 23 22.1	0.542
4	18 25 28.27	2.2341	28 22 45.5	0.678
5	18 27 42.30	2.2335	28 22 0.7	0.815
6	18 29 56.29	2.2329	28 21 7.7	0.952
7	18 32 10.25	2.2323	28 20 6.5	1.088
8	18 34 24.17	2.2316	28 18 57.1	1.225
9	18 36 38.04	2.2308	28 17 39.5	1.361
10	18 38 51.86	2.2299	28 16 13.8	1.497
11	18 41 5.63	2.2290	28 14 39.9	1.633
12	18 43 19.34	2.2280	28 12 57.8	1.769
13	18 45 32.99	2.2269	28 11 7.6	1.904
14	18 47 46.57	2.2258	28 9 9.3	2.040
15	18 50 0.08	2.2246	28 7 2.8	2.176
16	18 52 13.52	2.2233	28 4 48.2	2.310
17	18 54 26.87	2.2219	28 2 25.6	2.444
18	18 56 40.14	2.2205	27 59 54.9	2.578
19	18 58 53.33	2.2190	27 57 16.2	2.713
20	19 1 6.42	2.2174	27 54 29.4	2.846
21	19 3 19.42	2.2158	27 51 34.5	2.980
22	19 5 32.32	2.2141	27 48 31.6	3.114
23	19 7 45.11	2.2124	27 45 20.8	3.247
24	19 9 57.80	2.2106	S.27 42 2.0	3.379

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 9 57.80	2.2106	S.27 42 2.0	3.379
1	19 12 10.38	2.2087	27 38 35.3	3.512
2	19 14 22.84	2.2067	27 35 0.6	3.644
3	19 16 35.18	2.2047	27 31 18.0	3.776
4	19 18 47.41	2.2027	27 27 27.5	3.906
5	19 20 59.51	2.2006	27 23 29.2	4.037
6	19 23 11.48	2.1984	27 19 23.0	4.168
7	19 25 23.32	2.1962	27 15 9.0	4.298
8	19 27 35.03	2.1940	27 10 47.2	4.428
9	19 29 46.60	2.1917	27 6 17.7	4.557
10	19 31 58.03	2.1893	27 1 40.4	4.686
11	19 34 9.32	2.1869	26 56 55.4	4.814
12	19 36 20.46	2.1844	26 52 2.8	4.941
13	19 38 31.45	2.1819	26 47 2.5	5.069
14	19 40 42.29	2.1794	26 41 54.6	5.196
15	19 42 52.98	2.1768	26 36 39.0	5.322
16	19 45 3.51	2.1742	26 31 15.9	5.448
17	19 47 13.88	2.1716	26 25 45.2	5.574
18	19 49 24.10	2.1689	26 20 7.0	5.698
19	19 51 34.15	2.1661	26 14 21.4	5.823
20	19 53 44.03	2.1633	26 8 28.3	5.948
21	19 55 53.74	2.1605	26 2 27.7	6.072
22	19 58 3.29	2.1577	25 56 19.7	6.194
23	20 0 12.66	2.1548	S.25 50 4.4	6.316

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 2 21.86	2.1519	S.25 43 41.8	6.438
1	20 4 30.89	2.1490	25 37 11.9	6.559
2	20 6 39.74	2.1460	25 30 34.7	6.680
3	20 8 48.41	2.1430	25 23 50.3	6.800
4	20 10 56.90	2.1400	25 16 58.7	6.919
5	20 13 5.21	2.1370	25 10 0.0	7.038
6	20 15 13.34	2.1340	25 2 54.2	7.156
7	20 17 21.29	2.1309	24 55 41.3	7.274
8	20 19 29.05	2.1278	24 48 21.3	7.392
9	20 21 36.63	2.1248	24 40 54.3	7.509
10	20 23 44.03	2.1217	24 33 20.3	7.625
11	20 25 51.24	2.1186	24 25 39.3	7.741
12	20 27 58.26	2.1154	24 17 51.4	7.855
13	20 30 5.09	2.1123	24 9 56.7	7.969
14	20 32 11.74	2.1092	24 1 55.1	8.083
15	20 34 18.20	2.1061	23 53 46.7	8.196
16	20 36 24.47	2.1029	23 45 31.6	8.308
17	20 38 30.55	2.0997	23 37 9.8	8.420
18	20 40 36.44	2.0966	23 28 41.2	8.532
19	20 42 42.14	2.0935	23 20 6.0	8.642
20	20 44 47.66	2.0904	23 11 24.2	8.751
21	20 46 52.99	2.0872	23 2 35.9	8.860
22	20 48 58.13	2.0841	22 53 41.0	8.969
23	20 51 3.08	2.0809	22 44 39.6	9.077
24	20 53 7.84	2.0778	S.22 35 31.7	9.185

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 53 7.84	2.0778	S.22 35 31.7	9.185
1	20 55 12.42	2.0747	22 26 17.4	9.291
2	20 57 16.81	2.0716	22 16 56.8	9.397
3	20 59 21.01	2.0685	22 7 29.8	9.502
4	21 1 25.03	2.0655	21 57 56.5	9.607
5	21 3 28.87	2.0624	21 48 17.0	9.711
6	21 5 32.52	2.0593	21 38 31.2	9.814
7	21 7 35.99	2.0563	21 28 39.3	9.917
8	21 9 39.28	2.0533	21 18 41.2	10.019
9	21 11 42.39	2.0503	21 8 37.0	10.121
10	21 13 45.32	2.0473	20 58 26.7	10.221
11	21 15 48.07	2.0444	20 48 10.5	10.320
12	21 17 50.65	2.0415	20 37 48.3	10.419
13	21 19 53.05	2.0386	20 27 20.2	10.518
14	21 21 55.28	2.0357	20 16 46.1	10.617
15	21 23 57.34	2.0329	20 6 6.1	10.715
16	21 25 59.23	2.0301	19 55 20.3	10.811
17	21 28 0.95	2.0273	19 44 28.8	10.906
18	21 30 2.51	2.0246	19 33 31.6	11.001
19	21 32 3.91	2.0219	19 22 28.7	11.096
20	21 34 5.14	2.0192	19 11 20.1	11.190
21	21 36 6.21	2.0166	19 0 5.9	11.283
22	21 38 7.13	2.0140	18 48 46.2	11.375
23	21 40 7.89	2.0113	S.18 37 20.9	11.467

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 42 8.49	2.0087	S.18 25 50.1	11.558
1	21 44 8.94	2.0063	18 14 13.9	11.648
2	21 46 9.25	2.0039	18 2 32.3	11.738
3	21 48 9.41	2.0015	17 50 45.3	11.827
4	21 50 9.43	1.9992	17 38 53.0	11.915
5	21 52 9.31	1.9969	17 26 55.5	12.003
6	21 54 9.05	1.9946	17 14 52.7	12.090
7	21 56 8.66	1.9923	17 2 44.7	12.176
8	21 58 8.13	1.9901	16 50 31.6	12.261
9	22 0 7.47	1.9880	16 38 13.4	12.346
10	22 2 6.69	1.9860	16 25 50.1	12.430
11	22 4 5.79	1.9839	16 13 21.8	12.513
12	22 6 4.76	1.9819	16 0 48.5	12.596
13	22 8 3.62	1.9800	15 48 10.3	12.677
14	22 10 2.36	1.9781	15 35 27.2	12.758
15	22 12 0.99	1.9762	15 22 39.3	12.838
16	22 13 59.51	1.9745	15 9 46.6	12.918
17	22 15 57.93	1.9728	14 56 49.1	12.998
18	22 17 56.25	1.9712	14 43 46.8	13.076
19	22 19 54.47	1.9696	14 30 39.9	13.153
20	22 21 52.60	1.9680	14 17 28.4	13.230
21	22 23 50.63	1.9664	14 4 12.3	13.307
22	22 25 48.57	1.9651	13 50 51.6	13.382
23	22 27 46.44	1.9638	13 37 26.5	13.456
24	22 29 44.23	1.9625	S.13 23 56.9	13.530

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 17.					**SUNDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	22 29 44.23	1.9625	S. 13 23 56.9	13.530	0	0 3 46.68	1.9861	S. 1 24 57.9	16.083
1	22 31 41.94	1.9613	13 10 22.9	13.603	1	0 5 45.92	1.9887	1 8 52.0	16.113
2	22 33 39.58	1.9601	12 56 44.6	13.675	2	0 7 45.32	1.9912	0 52 44.3	16.142
3	22 35 37.15	1.9589	12 43 1.9	13.747	3	0 9 44.87	1.9938	0 36 35.0	16.168
4	22 37 34.65	1.9578	12 29 14.9	13.817	4	0 11 44.58	1.9967	0 20 24.1	16.194
5	22 39 32.09	1.9569	12 15 23.8	13.887	5	0 13 44.47	1.9997	S. 0 4 11.7	16.219
6	22 41 29.48	1.9560	12 1 28.5	13.956	6	0 15 44.54	2.0027	N. 0 12 2.2	16.242
7	22 43 26.81	1.9551	11 47 29.1	14.024	7	0 17 44.79	2.0057	0 28 17.4	16.265
8	22 45 24.09	1.9543	11 33 25.6	14.092	8	0 19 45.22	2.0088	0 44 34.0	16.287
9	22 47 21.33	1.9537	11 19 18.0	14.159	9	0 21 45.85	2.0121	1 0 51.8	16.306
10	22 49 18.53	1.9530	11 5 6.5	14.225	10	0 23 46.68	2.0155	1 17 10.7	16.324
11	22 51 15.69	1.9524	10 50 51.0	14.291	11	0 25 47.71	2.0189	1 33 30.7	16.342
12	22 53 12.82	1.9519	10 36 31.6	14.355	12	0 27 48.95	2.0225	1 49 51.7	16.358
13	22 55 9.92	1.9515	10 22 8.4	14.419	13	0 29 50.41	2.0262	2 6 13.6	16.373
14	22 57 7.00	1.9512	10 7 41.4	14.482	14	0 31 52.09	2.0299	2 22 36.4	16.386
15	22 59 4.06	1.9508	9 53 10.6	14.544	15	0 33 53.99	2.0337	2 38 59.9	16.397
16	23 1 1.10	1.9506	9 38 36.1	14.605	16	0 35 56.13	2.0377	2 55 24.1	16.408
17	23 2 58.13	1.9505	9 23 58.0	14.665	17	0 37 58.51	2.0417	3 11 48.9	16.418
18	23 4 55.16	1.9504	9 9 16.3	14.725	18	0 40 1.13	2.0458	3 28 14.2	16.426
19	23 6 52.18	1.9504	8 54 31.0	14.783	19	0 42 4.00	2.0500	3 44 40.0	16.432
20	23 8 49.21	1.9506	8 39 42.3	14.841	20	0 44 7.13	2.0543	4 1 6.1	16.437
21	23 10 46.25	1.9508	8 24 50.1	14.898	21	0 46 10.52	2.0587	4 17 32.4	16.440
22	23 12 43.30	1.9510	8 9 54.5	14.954	22	0 48 14.18	2.0632	4 33 58.9	16.442
23	23 14 40.37	1.9513	S. 7 54 55.6	15.009	23	0 50 18.11	2.0678	N. 4 50 25.5	16.443
	SATURDAY 18.					**MONDAY 20.**			
0	23 16 37.45	1.9516	S. 7 39 53.4	15.063	0	0 52 22.32	2.0725	N. 5 6 52.1	16.443
1	23 18 34.56	1.9521	7 24 48.0	15.117	1	0 54 26.81	2.0773	5 23 18.6	16.441
2	23 20 31.70	1.9527	7 9 39.4	15.170	2	0 56 31.60	2.0822	5 39 45.0	16.437
3	23 22 28.88	1.9533	6 54 27.6	15.222	3	0 58 36.68	2.0872	5 56 11.0	16.430
4	23 24 26.10	1.9541	6 39 12.7	15.273	4	1 0 42.06	2.0923	6 12 36.6	16.423
5	23 26 23.37	1.9548	6 23 54.8	15.323	5	1 2 47.75	2.0975	6 29 1.8	16.415
6	23 28 20.68	1.9556	6 8 34.0	15.372	6	1 4 53.76	2.1028	6 45 26.4	16.404
7	23 30 18.04	1.9566	5 53 10.2	15.420	7	1 7 0.09	2.1082	7 1 50.3	16.392
8	23 32 15.47	1.9577	5 37 43.6	15.467	8	1 9 6.74	2.1136	7 18 13.5	16.379
9	23 34 12.97	1.9589	5 22 14.2	15.512	9	1 11 13.72	2.1192	7 34 35.8	16.363
10	23 36 10.54	1.9601	5 6 42.1	15.557	10	1 13 21.04	2.1248	7 50 57.1	16.347
11	23 38 8.18	1.9613	4 51 7.3	15.602	11	1 15 28.70	2.1305	8 7 17.4	16.328
12	23 40 5.90	1.9627	4 35 29.8	15.646	12	1 17 36.70	2.1363	8 23 36.5	16.307
13	23 42 3.70	1.9642	4 19 49.8	15.688	13	1 19 45.06	2.1423	8 39 54.3	16.285
14	23 44 1.60	1.9657	4 4 7.3	15.729	14	1 21 53.78	2.1484	8 56 10.7	16.262
15	23 45 59.59	1.9673	3 48 22.3	15.770	15	1 24 2.87	2.1546	9 12 25.7	16.237
16	23 47 57.68	1.9691	3 32 34.9	15.809	16	1 26 12.33	2.1607	9 28 39.1	16.209
17	23 49 55.88	1.9709	3 16 45.2	15.847	17	1 23 22.16	2.1670	9 44 50.8	16.179
18	23 51 54.19	1.9728	3 0 53.3	15.884	18	1 30 32.37	2.1734	10 1 0.6	16.148
19	23 53 52.62	1.9748	2 44 59.2	15.920	19	1 32 42.97	2.1799	10 17 8.5	16.115
20	23 55 51.17	1.9768	2 29 2.9	15.955	20	1 34 53.96	2.1865	10 33 14.4	16.080
21	23 57 49.84	1.9789	2 13 4.6	15.989	21	1 37 5.35	2.1932	10 49 18.1	16.042
22	23 59 48.64	1.9812	1 57 4.3	16.022	22	1 39 17.15	2.2000	11 5 19.5	16.003
23	0 1 47.59	1.9836	1 41 2.0	16.053	23	1 41 29.35	2.2068	11 21 18.5	15.963
24	0 3 46.68	1.9861	S. 1 24 57.9	16.083	24	1 43 41.96	2.2137	N. 11 37 15.1	15.921

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 21.					**THURSDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	1 43 41.96	2.2137	N.11 37 15.1	15.921	0	3 39 11.47	2.6117	N.22 50 39.4	11.241
1	1 45 54.99	2.2207	11 53 9.0	15.876	1	3 41 48.43	2.6203	23 1 49.2	11.085
2	1 48 8.45	2.2278	12 9 0.2	15.829	2	3 44 25.90	2.6287	23 12 49.6	10.927
3	1 50 22.33	2.2350	12 24 48.5	15.780	3	3 47 3.87	2.6370	23 23 40.4	10.767
4	1 52 36.65	2.2423	12 40 33.8	15.729	4	3 49 42.34	2.6452	23 34 21.6	10.604
5	1 54 51.41	2.2497	12 56 16.0	15.677	5	3 52 21.30	2.6534	23 44 52.9	10.438
6	1 57 6.61	2.2571	13 11 55.0	15.622	6	3 55 0.75	2.6615	23 55 14.2	10.271
7	1 59 22.26	2.2646	13 27 30.6	15.564	7	3 57 40.68	2.6695	24 5 25.4	10.102
8	2 1 38.36	2.2722	13 43 2.7	15.505	8	4 0 21.09	2.6775	24 15 26.4	9.931
9	2 3 54.92	2.2799	13 58 31.2	15.443	9	4 3 1.98	2.6853	24 25 17.1	9.757
10	2 6 11.94	2.2876	14 13 55.9	15.380	10	4 5 43.33	2.6930	24 34 57.2	9.580
11	2 8 29.43	2.2953	14 29 16.8	15.315	11	4 8 25.14	2.7007	24 44 26.7	9.402
12	2 10 47.38	2.3032	14 44 33.7	15.247	12	4 11 7.41	2.7082	24 53 45.5	9.222
13	2 13 5.81	2.3112	14 59 46.4	15.176	13	4 13 50.12	2.7155	25 2 53.4	9.040
14	2 15 24.72	2.3192	15 14 54.8	15.104	14	4 16 33.27	2.7227	25 11 50.3	8.856
15	2 17 44.12	2.3273	15 29 58.9	15.030	15	4 19 16.85	2.7298	25 20 36.1	8.669
16	2 20 4.00	2.3354	15 44 58.4	14.953	16	4 22 0.85	2.7368	25 29 10.6	8.481
17	2 22 24.37	2.3436	15 59 53.2	14.874	17	4 24 45.27	2.7437	25 37 33.8	8.291
18	2 24 45.23	2.3519	16 14 43.3	14.793	18	4 27 30.09	2.7503	25 45 45.5	8.098
19	2 27 6.59	2.3602	16 29 28.4	14.709	19	4 30 15.31	2.7569	25 53 45.6	7.904
20	2 29 28.45	2.3685	16 44 8.4	14.623	20	4 33 0.92	2.7632	26 1 34.0	7.709
21	2 31 50.81	2.3769	16 58 43.1	14.534	21	4 35 46.90	2.7694	26 9 10.7	7.512
22	2 34 13.68	2.3854	17 13 12.5	14.443	22	4 38 33.25	2.7756	26 16 35.5	7.312
23	2 36 37.06	2.3940	N.17 27 36.3	14.350	23	4 41 19.97	2.7815	N.26 23 48.2	7.111
	WEDNESDAY 22.					**FRIDAY 24.**			
0	2 39 0.96	2.4026	N.17 41 54.5	14.255	0	4 44 7.03	2.7872	N.26 30 48.8	6.908
1	2 41 25.37	2.4112	17 56 6.9	14.157	1	4 46 54.43	2.7927	26 37 37.2	6.704
2	2 43 50.30	2.4197	18 10 13.4	14.057	2	4 49 42.15	2.7980	26 44 13.3	6.499
3	2 46 15.74	2.4284	18 24 13.8	13.954	3	4 52 30.19	2.8032	26 50 37.1	6.292
4	2 48 41.70	2.4371	18 38 7.9	13.849	4	4 55 18.53	2.8082	26 56 48.4	6.083
5	2 51 8.19	2.4458	18 51 55.7	13.742	5	4 58 7.17	2.8130	27 2 47.1	5.872
6	2 53 35.20	2.4546	19 5 37.0	13.632	6	5 0 56.09	2.8175	27 8 33.1	5.661
7	2 56 2.74	2.4633	19 19 11.6	13.520	7	5 3 45.27	2.8218	27 14 6.4	5.449
8	2 58 30.80	2.4721	19 32 39.4	13.405	8	5 6 34.71	2.8260	27 19 27.0	5.236
9	3 0 59.39	2.4809	19 46 0.2	13.288	9	5 9 24.39	2.8299	27 24 34.7	5.021
10	3 3 28.51	2.4897	19 59 14.0	13.169	10	5 12 14.30	2.8336	27 29 29.5	4.805
11	3 5 58.16	2.4985	20 12 20.5	13.047	11	5 15 4.42	2.8371	27 34 11.3	4.588
12	3 8 28.33	2.5073	20 25 19.6	12.923	12	5 17 54.75	2.8404	27 38 40.1	4.371
13	3 10 59.03	2.5162	20 38 11.2	12.796	13	5 20 45.27	2.8434	27 42 55.8	4.152
14	3 13 30.27	2.5250	20 50 55.1	12.666	14	5 23 35.96	2.8462	27 46 58.3	3.931
15	3 16 2.03	2.5338	21 3 31.1	12.534	15	5 26 26.81	2.8487	27 50 47.5	3.710
16	3 18 34.32	2.5426	21 15 59.2	12.401	16	5 29 17.81	2.8511	27 54 23.5	3.490
17	3 21 7.14	2.5513	21 28 19.2	12.264	17	5 32 8.94	2.8532	27 57 46.3	3.269
18	3 23 40.48	2.5601	21 40 30.9	12.125	18	5 35 0.19	2.8550	28 0 55.8	3.047
19	3 26 14.35	2.5688	21 52 34.2	11.983	19	5 37 51.54	2.8566	28 3 51.9	2.824
20	3 28 48.74	2.5775	22 4 28.9	11.839	20	5 40 42.98	2.8580	28 6 34.6	2.600
21	3 31 23.65	2.5862	22 16 14.9	11.693	21	5 43 34.50	2.8592	28 9 3.9	2.377
22	3 33 59.08	2.5947	22 27 52.1	11.545	22	5 46 26.08	2.8600	28 11 19.8	2.153
23	3 36 35.02	2.6032	22 39 20.3	11.394	23	5 49 17.70	2.8606	28 13 22.2	1.928
24	3 39 11.47	2.6117	N.22 50 39.4	11.241	24	5 52 9.35	2.8609	N.28 15 11.2	1.704

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 25.					MONDAY 27.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	′
0	5 52 9.35	2.8609	N.28 15 11.2	1.704	0	8 5 28.63	2.6201	N.25 30 4.8	8.096
1	5 55 1.01	2.8610	28 16 46.7	1.479	1	8 8 5.57	2.6113	25 21 54.1	8.260
2	5 57 52.67	2.8609	28 18 8.7	1.255	2	8 10 41.98	2.6024	25 13 33.6	8.423
3	6 0 44.32	2.8606	28 19 17.3	1.031	3	8 13 17.86	2.5935	25 5 3.3	8.584
4	6 3 35.94	2.8599	28 20 12.4	0.806	4	8 15 53.20	2.5844	24 56 23.5	8.743
5	6 6 27.51	2.8589	28 20 54.0	0.582	5	8 18 27.99	2.5753	24 47 34.2	8.899
6	6 9 19.01	2.8577	28 21 22.2	0.358	6	8 21 2.23	2.5661	24 38 35.6	9.053
7	6 12 10.44	2.8564	28 21 37.0	+ 0.134	7	8 23 35.92	2.5569	24 29 27.8	9.205
8	6 15 1.78	2.8547	28 21 38.3	− 0.089	8	8 26 9.06	2.5477	24 20 11.0	9.355
9	6 17 53.01	2.8528	28 21 26.3	0.312	9	8 28 41.65	2.5385	24 10 45.2	9.503
10	6 20 44.12	2.8507	28 21 0.9	0.534	10	8 31 13.68	2.5292	24 1 10.6	9.648
11	6 23 35.10	2.8484	28 20 22.2	0.756	11	8 33 45.15	2.5199	23 51 27.4	9.792
12	6 26 25.93	2.8457	28 19 30.1	0.978	12	8 36 16.07	2.5106	23 41 35.6	9.933
13	6 29 16.59	2.8428	28 18 24.8	1.198	13	8 38 46.42	2.5012	23 31 35.4	10.073
14	6 32 7.07	2.8397	28 17 6.3	1.418	14	8 41 16.21	2.4918	23 21 26.9	10.210
15	6 34 57.36	2.8364	28 15 34.6	1.637	15	8 43 45.44	2.4824	23 11 10.2	10.345
16	6 37 47.44	2.8328	28 13 49.8	1.855	16	8 46 14.10	2.4730	23 0 45.5	10.477
17	6 40 37.30	2.8291	28 11 51.9	2.073	17	8 48 42.20	2.4636	22 50 13.0	10.607
18	6 43 26.93	2.8251	28 9 41.0	2.289	18	8 51 9.73	2.4542	22 39 32.7	10.736
19	6 46 16.31	2.8208	28 7 17.2	2.505	19	8 53 36.70	2.4448	22 28 44.7	10.862
20	6 49 5.43	2.8163	28 4 40.4	2.720	20	8 56 3.11	2.4354	22 17 49.3	10.985
21	6 51 54.27	2.8117	28 1 50.8	2.933	21	8 58 28.95	2.4260	22 6 46.5	11.107
22	6 54 42.83	2.8068	27 58 48.4	3.145	22	9 0 54.23	2.4167	21 55 36.5	11.227
23	6 57 31.09	2.8017	N.27 55 33.4	3.355	23	9 3 18.95	2.4074	N.21 44 19.3	11.345
	SUNDAY 26.					TUESDAY 28.			
0	7 0 19.03	2.7963	N.27 52 5.8	3.564	0	9 5 43.12	2.3981	N.21 32 55.1	11.460
1	7 3 6.65	2.7908	27 48 25.7	3.773	1	9 8 6.73	2.3888	21 21 24.1	11.573
2	7 5 53.93	2.7852	27 44 33.1	3.980	2	9 10 29.78	2.3795	21 9 46.3	11.685
3	7 8 40.87	2.7793	27 40 28.1	4.185	3	9 12 52.27	2.3702	20 58 1.9	11.794
4	7 11 27.45	2.7732	27 36 10.9	4.388	4	9 15 14.21	2.3611	20 46 11.0	11.902
5	7 14 13.65	2.7668	27 31 41.5	4.591	5	9 17 35.60	2.3520	20 34 13.7	12.007
6	7 16 59.47	2.7604	27 27 0.0	4.792	6	9 19 56.45	2.3429	20 22 10.2	12.110
7	7 19 44.90	2.7538	27 22 6.5	4.991	7	9 22 16.75	2.3338	20 10 0.5	12.212
8	7 22 29.93	2.7471	27 17 1.1	5.188	8	9 24 36.50	2.3248	19 57 44.8	12.310
9	7 25 14.55	2.7401	27 11 44.0	5.383	9	9 26 55.72	2.3159	19 45 23.3	12.407
10	7 27 58.74	2.7329	27 6 15.2	5.578	10	9 29 14.41	2.3070	19 32 56.0	12.502
11	7 30 42.50	2.7257	27 0 34.7	5.771	11	9 31 32.56	2.2981	19 20 23.1	12.595
12	7 33 25.83	2.7184	26 54 42.7	5.961	12	9 33 50.18	2.2893	19 7 44.6	12.687
13	7 36 8.71	2.7108	26 48 39.4	6.149	13	9 36 7.27	2.2806	18 55 0.7	12.776
14	7 38 51.13	2.7031	26 42 24.8	6.337	14	9 38 23.85	2.2720	18 42 11.5	12.863
15	7 41 33.08	2.6953	26 35 59.0	6.522	15	9 40 39.91	2.2633	18 29 17.1	12.948
16	7 44 14.56	2.6874	26 29 22.2	6.704	16	9 42 55.45	2.2547	18 16 17.7	13.032
17	7 46 55.57	2.6794	26 22 34.5	6.885	17	9 45 10.48	2.2463	18 3 13.3	13.114
18	7 49 36.09	2.6712	26 15 36.0	7.064	18	9 47 25.01	2.2380	17 50 4.0	13.194
19	7 52 16.12	2.6629	26 8 26.8	7.242	19	9 49 39.04	2.2297	17 36 50.0	13.272
20	7 54 55.64	2.6545	26 1 7.0	7.417	20	9 51 52.57	2.2214	17 23 31.3	13.348
21	7 57 34.66	2.6461	25 53 36.8	7.589	21	9 54 5.60	2.2131	17 10 8.2	13.422
22	8 0 13.17	2.6375	25 45 56.3	7.760	22	9 56 18.14	2.2050	16 56 40.7	13.495
23	8 2 51.16	2.6288	25 38 5.6	7.929	23	9 58 30.20	2.1971	16 43 8.8	13.566
24	8 5 28.63	2.6201	N.25 30 4.8	8.096	24	10 0 41.79	2.1892	N.16 29 32.7	13.635

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 0 41.79	2.1892	N.16 29 32.7	13.635
1	10 2 52.90	2.1813	16 15 52.6	13.702
2	10 5 3.54	2.1734	16 2 8.5	13.768
3	10 7 13.71	2.1657	15 48 20.4	13.833
4	10 9 23.42	2.1581	15 34 28.5	13.895
5	10 11 32.68	2.1506	15 20 33.0	13.955
6	10 13 41.50	2.1432	15 6 33.9	14.014
7	10 15 49.87	2.1358	14 52 31.3	14.072
8	10 17 57.80	2.1285	14 38 25.3	14.128
9	10 20 5.29	2.1213	14 24 16.0	14.182
10	10 22 12.36	2.1143	14 10 3.5	14.234
11	10 24 19.01	2.1073	13 55 47.9	14.285
12	10 26 25.24	2.1004	13 41 29.3	14.334
13	10 28 31.06	2.0936	13 27 7.8	14.382
14	10 30 36.47	2.0868	13 12 43.4	14.429
15	10 32 41.48	2.0802	12 58 16.3	14.474
16	10 34 46.10	2.0737	12 43 46.5	14.518
17	10 36 50.33	2.0672	12 29 14.1	14.560
18	10 38 54.17	2.0608	12 14 39.3	14.600
19	10 40 57.63	2.0546	12 0 2.1	14.639
20	10 43 0.72	2.0485	11 45 22.6	14.677
21	10 45 3.45	2.0425	11 30 40.8	14.714
22	10 47 5.82	2.0365	11 15 56.9	14.749
23	10 49 7.83	2.0306	N.11 1 10.9	14.782

THURSDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 51 9.49	2.0248	N.10 46 23.0	14.814
1	10 53 10.81	2.0192	10 31 33.2	14.846
2	10 55 11.79	2.0136	10 16 41.5	14.876
3	10 57 12.44	2.0081	10 1 48.1	14.904
4	10 59 12.76	2.0027	9 46 53.0	14.932
5	11 1 12.76	1.9974	9 31 56.3	14.958
6	11 3 12.45	1.9922	9 16 58.1	14.982
7	11 5 11.83	1.9871	9 1 58.5	15.005
8	11 7 10.90	1.9821	8 46 57.5	15.027
9	11 9 9.68	1.9772	8 31 55.2	15.048
10	11 11 8.17	1.9724	8 16 51.7	15.068
11	11 13 6.37	1.9677	8 1 47.0	15.086
12	11 15 4.29	1.9631	7 46 41.3	15.103
13	11 17 1.94	1.9586	7 31 34.6	15.120
14	11 18 59.32	1.9541	7 16 26.9	15.136
15	11 20 56.43	1.9497	7 1 18.3	15.150
16	11 22 53.28	1.9455	6 46 8.9	15.162
17	11 24 49.89	1.9415	6 30 58.9	15.173
18	11 26 46.26	1.9375	6 15 48.2	15.183
19	11 28 42.39	1.9335	6 0 36.9	15.193
20	11 30 38.28	1.9296	5 45 25.0	15.202
21	11 32 33.94	1.9258	5 30 12.7	15.209
22	11 34 29.38	1.9222	5 15 0.0	15.215
23	11 36 24.61	1.9186	4 59 46.9	15.221
24	11 38 19.62	1.9151	N. 4 44 33.5	15.225

FRIDAY, DECEMBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 38 19.62	1.9151	N. 4 44 33.5	15.225

PHASES OF THE MOON.

		d	h	m
● New Moon . .	Nov.	8	0	56.9
☽ First Quarter		16	5	44.6
○ Full Moon		23	6	8.3
☾ Last Quarter		29	21	8.0

		d	h
☾ Apogee	Nov.	11	15.4
☾ Perigee		24	2.0

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P.L. of Diff.	IIIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
1	**Jupiter**	W.	77° 55′ 2″	2431	79° 37′ 52″	2443	81° 20′ 26″	2454	83° 2′ 44″	2465
	Aldebaran	W.	68 44 33	2524	70 25 13	2534	72 5 39	2544	73 45 51	2555
	Pollux	W.	24 35 36	2464	26 17 40	2475	27 59 29	2486	29 41 2	2497
	Sun	E.	82 56 47	2789	81 22 5	2801	79 47 39	2815	78 13 30	2828
2	**Jupiter**	W.	91 30 18	2521	93 11 2	2531	94 51 32	2542	96 31 47	2553
	Aldebaran	W.	82 3 12	2607	83 41 57	2618	85 20 27	2629	86 58 43	2639
	Pollux	W.	38 5 0	2551	39 45 2	2561	41 24 50	2572	43 4 23	2583
	Sun	E.	70 26 47	2888	68 54 13	2901	67 21 55	2912	65 49 51	2924
3	Aldebaran	W.	95 6 31	2691	96 43 23	2702	98 20 0	2713	99 56 23	2722
	Pollux	W.	51 18 33	2634	52 56 42	2644	54 34 37	2654	56 12 19	2663
	Sun	E.	58 13 16	2981	56 42 40	2992	55 12 17	3003	53 42 8	3014
4	Pollux	W.	64 17 36	2710	65 54 2	2720	67 30 15	2729	69 6 17	2738
	Regulus	W.	27 48 0	2747	29 23 37	2753	30 59 7	2759	32 34 29	2765
	Sun	E.	46 14 44	3067	44 45 54	3078	43 17 17	3087	41 48 52	3096
5	Pollux	W.	77 3 33	2781	78 38 26	2788	80 13 9	2797	81 47 41	2805
	Regulus	W.	40 29 11	2799	42 3 40	2806	43 38 0	2814	45 12 10	2821
	Sun	E.	34 29 53	3148	33 2 41	3158	31 35 42	3168	30 8 55	3178
6	Pollux	W.	89 37 45	2845	91 11 15	2852	92 44 35	2860	94 17 45	2868
	Regulus	W.	53 0 42	2856	54 33 57	2864	56 7 2	2871	57 39 58	2878
	Sun	E.	22 58 5	3932	21 32 34	3944	20 7 17	3957	18 42 15	3970
9	**Sun**	W.	11 5 53	3474	12 26 46	3464	13 47 50	3457	15 9 2	3454
	α Aquilæ	E.	67 51 48	4029	66 40 37	4059	65 29 55	4089	64 19 43	4121
	Fomalhaut	E.	92 55 46	3907	91 29 45	3912	90 3 50	3918	88 38 2	3923
10	**Sun**	W.	21 55 32	3454	23 16 47	3456	24 38 0	3459	25 59 10	3462
	α Aquilæ	E.	58 37 12	4319	57 30 37	4367	56 24 46	4417	55 19 40	4472
	Fomalhaut	E.	81 30 41	3953	80 5 34	3959	78 40 34	3965	77 15 41	3971
	α Pegasi	E.	102 43 36	3382	101 20 59	3383	99 58 23	3384	98 35 48	3386
11	**Sun**	W.	32 44 22	3472	34 5 17	3474	35 26 10	3476	36 47 1	3477
	α Aquilæ	E.	50 7 19	4809	49 7 50	4892	48 9 29	4984	47 12 21	5081
	Fomalhaut	E.	70 13 10	3304	68 49 3	3312	67 25 5	3319	66 1 15	3325
	α Pegasi	E.	91 43 20	3394	90 20 57	3396	88 58 36	3399	87 36 18	3401
12	**Sun**	W.	43 31 1	3480	44 51 48	3480	46 12 35	3480	47 33 22	3478
	Fomalhaut	E.	59 4 18	3367	57 41 24	3376	56 18 40	3386	54 56 8	3396
	α Pegasi	E.	80 45 32	3415	79 23 33	3418	78 1 37	3422	76 39 45	3424
13	**Sun**	W.	54 17 46	3467	55 38 47	3464	56 59 51	3460	58 21 0	3455
	Fomalhaut	E.	48 6 39	3461	46 45 31	3478	45 24 42	3495	44 4 12	3515
	α Pegasi	E.	69 51 23	3444	68 29 56	3449	67 8 35	3454	65 47 19	3459
14	**Sun**	W.	65 8 7	3498	66 29 52	3491	67 51 45	3414	69 13 46	3405
	Venus	W.	19 11 28	3493	20 32 0	3486	21 52 43	3479	23 13 38	3463
	α Pegasi	E.	59 2 39	3493	57 42 7	3502	56 21 45	3512	55 1 34	3522
	α Arietis	E.	99 30 22	3067	98 1 57	3060	96 33 23	3073	95 4 41	3065

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	JUPITER	W.	84° 44′ 46″	2477	86° 26′ 32″	2487	88° 8′ 3″	2499	89° 49′ 18″	2510
	Aldebaran	W.	75 25 48	2565	77 5 31	2576	78 44 59	2586	80 24 13	2597
	Pollux	W.	31 22 20	2507	33 3 23	2519	34 44 10	2529	36 24 43	2540
	SUN	E.	76 39 38	2840	75 6 2	2852	73 32 41	2864	71 59 36	2876
2	JUPITER	W.	98 11 47	2563	99 51 33	2574	101 31 4	2584	103 10 21	2594
	Aldebaran	W.	88 36 45	2649	90 14 33	2660	91 52 6	2670	93 29 26	2681
	Pollux	W.	44 43 41	2593	46 22 45	2604	48 1 35	2614	49 40 11	2624
	SUN	E.	64 18 3	2936	62 46 30	2947	61 15 11	2958	59 44 6	2970
3	Aldebaran	W.	101 32 33	2733	103 8 29	2744	104 44 11	2753	106 19 40	2764
	Pollux	W.	57 49 48	2673	59 27 4	2683	61 4 7	2692	62 40 58	2701
	SUN	E.	52 12 13	3025	50 42 31	3035	49 13 2	3046	47 43 46	3057
4	Pollux	W.	70 42 7	2746	72 17 46	2755	73 53 13	2763	75 28 29	2772
	Regulus	W.	34 9 43	2772	35 44 48	2778	37 19 45	2785	38 54 33	2792
	SUN	E.	40 20 40	3108	38 52 40	3118	37 24 52	3128	35 57 16	3138
5	Pollux	W.	83 22 3	2813	84 56 14	2821	86 30 15	2829	88 4 5	2837
	Regulus	W.	46 46 11	2828	48 20 3	2835	49 53 45	2842	51 27 18	2849
	SUN	E.	28 42 20	3188	27 15 57	3199	25 49 47	3209	24 23 49	3221
6	Pollux	W.	95 50 45	2875	97 23 36	2883	98 56 17	2890	100 28 49	2898
	Regulus	W.	59 12 45	2885	60 45 23	2892	62 17 52	2899	63 50 12	2907
	SUN	E.	17 17 29	3286	15 53 1	3303	14 28 53	3322	13 5 7	3342
9	SUN	W.	16 30 18	3451	17 51 37	3451	19 12 56	3451	20 34 15	3453
	α Aquilæ	E.	63 10 2	4157	62 0 55	4194	60 52 23	4233	59 44 28	4275
	Fomalhaut	E.	87 12 20	3929	85 46 45	3936	84 21 17	3941	82 55 56	3946
10	SUN	W.	27 20 17	3463	28 41 22	3465	30 2 25	3468	31 23 25	3471
	α Aquilæ	E.	54 15 23	4530	53 11 57	4593	52 9 26	4659	51 7 52	4739
	Fomalhaut	E.	75 50 56	3977	74 26 18	3984	73 1 48	3990	71 37 25	3997
	α Pegasi	E.	97 13 15	3386	95 50 43	3388	94 28 13	3390	93 5 45	3393
11	SUN	W.	38 7 51	3479	39 28 39	3479	40 49 27	3480	42 10 14	3480
	α Aquilæ	E.	46 16 29	5187	45 21 58	5303	44 28 53	5429	43 37 19	5567
	Fomalhaut	E.	64 37 33	3333	63 14 0	3340	61 50 37	3350	60 27 23	3358
	α Pegasi	E.	86 14 3	3403	84 51 50	3407	83 29 41	3409	82 7 35	3412
12	SUN	W.	48 54 11	3477	50 15 1	3474	51 35 54	3472	52 56 49	3471
	Fomalhaut	E.	53 33 47	3408	52 11 39	3419	50 49 44	3432	49 28 4	3446
	α Pegasi	E.	75 17 56	3428	73 56 11	3432	72 34 31	3436	71 12 55	3439
13	SUN	W.	59 42 14	3451	61 3 33	3446	62 24 58	3440	63 46 29	3434
	Fomalhaut	E.	42 44 4	3536	41 24 20	3561	40 5 3	3588	38 46 16	3618
	α Pegasi	E.	64 26 9	3465	63 5 6	3471	61 44 9	3478	60 23 20	3486
14	SUN	W.	70 35 57	3397	71 58 17	3388	73 20 47	3379	74 43 27	3369
	VENUS	W.	24 34 44	3452	25 56 2	3440	27 17 33	3430	28 39 16	3419
	α Pegasi	E.	53 41 34	3536	52 21 48	3548	51 2 17	3564	49 43 3	3580
	α Arietis	E.	93 35 49	3058	92 6 48	3049	90 37 36	3041	89 8 14	3032

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	**Sun**	W.	76° 6′ 19″	3359	77° 29′ 22″	3348	78° 52′ 38″	3337	80° 16′ 7″	3326
	Venus	W.	30 1 11	3407	31 23 20	3395	32 45 42	3383	34 8 18	3370
	α Pegasi	E.	48 24 7	3599	47 5 32	3621	45 47 20	3646	44 29 35	3673
	α Arietis	E.	87 38 41	3023	86 8 57	3013	84 39 0	3003	83 8 51	2992
	Jupiter	E.	107 10 16	2940	105 38 48	2931	104 7 8	2920	102 35 15	2909
16	**Sun**	W.	87 17 4	3259	88 42 3	3246	90 7 18	3231	91 32 51	3215
	Venus	W.	41 5 7	3300	42 29 18	3285	43 53 47	3270	45 18 34	3253
	α Arietis	E.	75 34 39	2935	74 3 5	2922	72 31 14	2909	70 59 7	2896
	Jupiter	E.	94 52 11	2849	93 18 47	2835	91 45 5	2822	90 11 6	2808
	Aldebaran	E.	106 4 30	2948	104 33 12	2933	103 1 35	2920	101 29 41	2904
17	**Sun**	W.	98 45 18	3133	100 12 47	3115	101 40 38	3097	103 8 51	3079
	Venus	W.	52 27 22	3168	53 54 10	3150	55 21 19	3131	56 48 51	3112
	α Aquilæ	W.	46 17 50	4760	47 17 59	4642	48 19 48	4531	49 23 13	4428
	α Arietis	E.	63 14 12	2827	61 40 19	2812	60 6 7	2798	58 31 36	2782
	Jupiter	E.	82 16 27	2733	80 40 31	2716	79 4 13	2701	77 27 34	2684
	Aldebaran	E.	93 45 15	2826	92 11 21	2809	90 37 5	2792	89 2 27	2775
18	**Sun**	W.	110 35 37	2984	112 6 10	2965	113 37 7	2945	115 8 29	2924
	Venus	W.	64 12 22	3014	65 42 18	2993	67 12 39	2973	68 43 26	2952
	α Aquilæ	W.	55 1 55	4001	56 13 34	3929	57 26 24	3862	58 40 22	3799
	α Arietis	E.	50 34 8	2709	48 57 40	2695	47 20 53	2681	45 43 48	2667
	Jupiter	E.	69 18 34	2597	67 39 35	2579	66 0 11	2561	64 20 22	2543
	Aldebaran	E.	81 3 40	2689	79 26 45	2671	77 49 26	2653	76 11 43	2635
19	**Sun**	W.	122 51 47	2823	124 25 45	2802	126 0 10	2782	127 35 1	2763
	Venus	W.	76 23 56	2847	77 57 23	2825	79 31 18	2805	81 5 40	2784
	α Aquilæ	W.	65 5 41	3526	66 25 34	3481	67 46 19	3438	69 7 53	3395
	Fomalhaut	W.	33 27 37	3192	34 53 56	3114	36 21 49	3043	37 51 8	2980
	Jupiter	E.	55 54 56	2451	54 12 34	2433	52 29 46	2414	50 46 31	2396
	Aldebaran	E.	67 57 1	2545	66 16 51	2528	64 36 17	2511	62 55 19	2494
	Pollux	E.	111 29 50	2479	109 48 7	2459	108 5 56	2440	106 23 18	2420
20	**Venus**	W.	89 4 22	2680	90 41 29	2660	92 19 3	2640	93 57 4	2621
	α Aquilæ	W.	76 7 1	3214	77 32 53	3184	78 59 21	3155	80 26 24	3129
	Fomalhaut	W.	45 35 56	2726	47 12 1	2685	48 49 1	2647	50 26 52	2612
	Jupiter	E.	42 3 55	2309	40 18 9	2294	38 32 0	2277	36 45 27	2262
	Aldebaran	E.	54 24 44	2415	52 41 31	2401	50 57 58	2388	49 14 6	2375
	Pollux	E.	97 43 17	2326	95 57 55	2307	94 12 6	2289	92 25 51	2271
21	**Venus**	W.	102 13 38	2528	103 54 12	2511	105 35 10	2494	107 16 31	2478
	α Aquilæ	W.	87 49 9	3019	89 18 58	3002	90 49 8	2988	92 19 36	2976
	Fomalhaut	W.	58 47 30	2460	60 29 40	2435	62 12 25	2411	63 55 44	2388
	α Pegasi	W.	40 2 44	3023	41 32 28	2950	43 3 44	2882	44 36 26	2821
	Aldebaran	E.	40 30 49	2331	38 45 35	2328	37 0 16	2326	35 14 55	2328
	Pollux	E.	83 28 4	2186	81 39 16	2170	79 50 4	2156	78 0 30	2141
22	Fomalhaut	W.	72 39 54	2294	74 26 3	2279	76 12 34	2264	77 59 26	2251
	α Pegasi	W.	52 37 34	2590	54 16 43	2555	55 56 40	2522	57 37 22	2493
	Pollux	E.	68 47 16	2075	66 55 38	2064	65 3 43	2053	63 11 32	2043
	Regulus	E.	105 27 15	2082	103 35 48	2071	101 44 4	2060	99 52 3	2050

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff.
15	Sun	W.	81° 39′ 49″	3313	83° 3′ 45″	3300	84° 27′ 56″	3288	85° 52′ 22″	3274
	Venus	W.	35 31 9	3357	36 54 15	3344	38 17 36	3330	39 41 13	3315
	α Pegasi	E.	43 12 19	3705	41 55 37	3741	40 39 33	3782	39 24 12	3827
	α Arietis	E.	81 38 28	2981	80 7 52	2970	78 37 2	2959	77 5 58	2947
	Jupiter	E.	101 3 8	2898	99 30 46	2887	97 58 10	2875	96 25 19	2862
16	Sun	W.	92 58 42	3199	94 24 52	3183	95 51 21	3168	97 18 9	3150
	Venus	W.	46 43 40	3237	48 9 5	3220	49 34 50	3203	51 0 56	3186
	α Arietis	E.	69 26 43	2883	67 54 2	2869	66 21 3	2855	64 47 47	2841
	Jupiter	E.	88 36 49	2794	87 2 13	2779	85 27 18	2764	83 52 3	2748
	Aldebaran	E.	99 57 27	2889	98 24 54	2873	96 52 1	2858	95 18 48	2842
17	Sun	W.	104 37 26	3061	106 6 23	3042	107 35 44	3022	109 5 29	3004
	Venus	W.	58 16 46	3093	59 45 4	3073	61 13 46	3054	62 42 52	3034
	α Aquilæ	W.	50 28 9	4331	51 34 33	4240	52 42 21	4156	53 51 29	4075
	α Arietis	E.	56 56 45	2768	55 21 35	2753	53 46 6	2738	52 10 17	2723
	Jupiter	E.	75 50 32	2666	74 13 7	2650	72 35 20	2632	70 57 9	2615
	Aldebaran	E.	87 27 27	2759	85 52 5	2741	84 16 20	2724	82 40 12	2706
18	Sun	W.	116 40 17	2904	118 12 31	2884	119 45 10	2864	121 18 15	2843
	Venus	W.	70 14 39	2931	71 46 18	2910	73 18 24	2890	74 50 56	2868
	α Aquilæ	W.	59 55 25	3739	61 11 31	3682	62 28 37	3628	63 46 41	3576
	α Arietis	E.	44 6 24	2655	42 28 43	2642	40 50 45	2630	39 12 31	2620
	Jupiter	E.	62 40 8	2524	60 59 28	2506	59 18 23	2487	57 36 52	2470
	Aldebaran	E.	74 33 35	2617	72 55 3	2599	71 16 7	2581	69 36 46	2564
19	Sun	W.	129 10 18	2742	130 46 2	2722	132 22 12	2703	133 58 48	2684
	Venus	W.	82 40 29	2763	84 15 46	2742	85 51 30	2721	87 27 42	2700
	α Aquilæ	W.	70 30 15	3355	71 53 23	3318	73 17 14	3282	74 41 47	3247
	Fomalhaut	W.	39 21 46	2920	40 53 39	2866	42 26 41	2816	44 0 48	2769
	Jupiter	E.	49 2 51	2378	47 18 45	2360	45 34 13	2343	43 49 16	2326
	Aldebaran	E.	61 13 58	2477	59 32 13	2462	57 50 6	2445	56 7 36	2430
	Pollux	E.	104 40 12	2401	102 56 39	2382	101 12 39	2364	99 28 12	2344
20	Venus	W.	95 35 31	2601	97 14 25	2583	98 53 44	2564	100 33 29	2546
	α Aquilæ	W.	81 53 59	3103	83 22 5	3079	84 50 40	3057	86 19 42	3037
	Fomalhaut	W.	52 5 31	2577	53 44 57	2545	55 25 7	2515	57 5 59	2487
	Jupiter	E.	34 58 32	2248	33 11 16	2235	31 23 40	2223	29 35 46	2211
	Aldebaran	E.	47 29 56	2364	45 45 30	2354	44 0 49	2344	42 15 54	2337
	Pollux	E.	90 39 9	2253	88 52 1	2236	87 4 27	2219	85 16 28	2202
21	Venus	W.	108 58 15	2463	110 40 20	2448	112 22 47	2433	114 5 34	2419
	α Aquilæ	W.	93 50 19	2965	95 21 16	2956	96 52 24	2950	98 23 40	2945
	Fomalhaut	W.	65 39 36	2367	67 23 58	2346	69 8 50	2328	70 54 9	2310
	α Pegasi	W.	46 10 26	2766	47 45 38	2716	49 21 57	2670	50 59 17	2628
	Aldebaran	E.	33 29 36	2333	31 44 24	2342	29 59 26	2356	28 14 48	2376
	Pollux	E.	76 10 33	2127	74 20 15	2113	72 29 35	2099	70 38 35	2087
22	Fomalhaut	W.	79 46 37	2239	81 34 6	2229	83 21 50	2220	85 9 48	2211
	α Pegasi	W.	59 18 45	2467	61 0 45	2442	62 43 20	2421	64 20 25	2401
	Pollux	E.	61 19 5	2034	59 26 24	2025	57 33 29	2017	55 40 22	2011
	Regulus	E.	97 59 46	2041	96 7 15	2032	94 14 30	2024	92 21 33	2016

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Fomalhaut	W.	86° 57′ 59″	2204	88° 46′ 20″	2198	90° 34′ 50″	2194	92° 23′ 27″	2190
	α Pegasi	W.	66 9 59	2383	67 53 58	2367	69 38 20	2353	71 23 2	2342
	Pollux	E.	53 47 5	2005	51 53 38	1999	50 0 2	1994	48 6 19	1990
	Regulus	E.	90 28 24	2010	88 35 5	2005	86 41 38	2000	84 48 3	1996
24	α Pegasi	W.	80 10 6	2305	81 55 58	2303	83 41 53	2302	85 27 49	2302
	α Arietis	W.	37 0 36	2105	38 51 27	2096	40 42 33	2088	42 33 50	2083
	Pollux	E.	38 36 35	1983	36 42 34	1984	34 48 34	1986	32 54 37	1989
	Regulus	E.	75 18 59	1987	73 25 5	1988	71 31 12	1990	69 37 22	1993
25	α Arietis	W.	51 51 29	2079	53 43 0	2082	55 34 27	2086	57 25 47	2092
	Jupiter	W.	33 20 20	2003	35 13 49	2007	37 7 12	2011	39 0 29	2017
	Regulus	E.	60 9 33	2016	58 16 24	2023	56 23 26	2031	54 30 40	2039
	Saturn	E.	112 42 57	2039	110 50 24	2045	108 58 0	2052	107 5 47	2061
26	α Arietis	W.	66 40 2	2130	68 30 15	2140	70 20 13	2151	72 9 55	2163
	Jupiter	W.	48 24 17	2057	50 16 23	2068	52 8 12	2079	53 59 44	2090
	Aldebaran	W.	36 33 19	2237	38 20 52	2236	40 8 26	2237	41 55 58	2240
	Regulus	E.	45 10 28	2092	43 19 17	2105	41 28 25	2118	39 37 53	2132
	Saturn	E.	97 48 7	2109	95 57 22	2120	94 6 54	2132	92 16 44	2145
	Spica	E.	99 8 52	2077	97 17 18	2089	95 26 2	2101	93 35 4	2113
27	α Arietis	W.	81 13 49	2227	83 1 36	2241	84 49 2	2256	86 36 6	2271
	Jupiter	W.	63 12 47	2155	65 2 23	2169	66 51 37	2183	68 40 30	2198
	Aldebaran	W.	50 51 52	2275	52 38 28	2285	54 24 49	2296	56 10 54	2309
	Saturn	E.	83 10 52	2214	81 22 45	2229	79 35 0	2243	77 47 37	2259
	Spica	E.	84 25 11	2182	82 36 16	2196	80 47 43	2211	78 59 32	2227
	Mars	E.	98 31 1	2387	96 47 7	2401	95 3 34	2417	93 20 24	2433
	Sun	E.	127 12 3	2507	125 30 59	2522	123 50 17	2538	122 9 57	2554
28	α Arietis	W.	95 25 45	2350	97 10 31	2368	98 54 52	2384	100 38 49	2401
	Jupiter	W.	77 39 13	2276	79 25 48	2291	81 12 0	2308	82 57 48	2321
	Aldebaran	W.	64 56 46	2375	66 40 57	2389	68 24 48	2403	70 8 18	2419
	Saturn	E.	68 56 30	2339	67 11 28	2356	65 26 50	2373	63 42 36	2389
	Spica	E.	70 4 25	2307	68 18 35	2322	66 33 8	2339	64 48 5	2355
	Mars	E.	84 50 20	2517	83 9 30	2534	81 29 4	2551	79 49 2	2569
	Sun	E.	113 53 54	2638	112 15 51	2656	110 38 12	2673	109 0 56	2691
29	Jupiter	W.	91 40 53	2405	93 24 20	2422	95 7 23	2439	96 50 3	2455
	Aldebaran	W.	78 40 21	2497	80 21 39	2512	82 2 36	2527	83 43 11	2543
	Pollux	W.	34 41 24	2440	36 24 2	2456	38 6 17	2472	39 48 9	2488
	Saturn	E.	55 7 23	2473	53 25 32	2489	51 44 4	2507	50 3 0	2523
	Spica	E.	56 8 48	2438	54 26 7	2455	52 43 50	2471	51 1 56	2488
	Mars	E.	71 34 50	2656	69 57 11	2673	68 19 55	2690	66 43 2	2707
	Sun	E.	101 0 31	2780	99 25 37	2797	97 51 5	2815	96 16 56	2832
30	Aldebaran	W.	92 0 30	2622	93 39 4	2638	95 17 8	2653	96 54 51	2668
	Pollux	W.	48 12 0	2566	49 51 42	2581	51 31 3	2596	53 10 4	2611
	Saturn	E.	41 43 23	2605	40 4 35	2621	38 26 9	2638	36 48 5	2654
	Spica	E.	42 38 8	2567	40 58 28	2583	39 19 10	2599	37 40 13	2613
	Mars	E.	58 44 17	2792	57 9 38	2808	55 35 21	2825	54 1 25	2840
	Sun	E.	88 31 50	2918	86 59 54	2935	85 28 19	2951	83 57 5	2968

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Fomalhaut	W.	94° 12′ 10″	2188	96° 0′ 56″	2187	97° 49′ 43″	2187	99° 38′ 30″	2188
	α Pegasi	W.	73 8 1	2331	74 53 16	2322	76 38 43	2315	78 24 20	2309
	Pollux	E.	46 12 29	1987	44 18 35	1986	42 24 37	1984	40 30 37	1982
	Regulus	E.	82 54 22	1993	81 0 36	1990	79 6 46	1988	77 12 53	1987
24	α Pegasi	W.	87 13 45	2304	88 59 38	2307	90 45 27	2312	92 31 9	2319
	α Arietis	W.	44 25 15	2079	46 16 46	2077	48 8 20	2077	49 59 55	2077
	Pollux	E.	31 0 45	1992	29 6 58	1997	27 13 19	2002	25 19 48	2009
	Regulus	E.	67 43 36	1996	65 49 55	2000	63 56 20	2004	62 2 52	2010
25	α Arietis	W.	59 16 59	2098	61 8 2	2105	62 58 54	2112	64 49 35	2121
	Jupiter	W.	40 53 37	2023	42 46 35	2030	44 39 22	2039	46 31 56	2047
	Regulus	E.	52 38 7	2048	50 45 48	2059	48 53 45	2069	47 1 58	2080
	Saturn	E.	105 13 47	2069	103 22 0	2078	101 30 27	2088	99 39 9	2098
26	α Arietis	W.	73 59 19	2174	75 48 25	2186	77 37 13	2200	79 25 41	2213
	Jupiter	W.	55 50 59	2101	57 41 56	2115	59 32 33	2128	61 22 50	2141
	Aldebaran	W.	43 43 26	2245	45 30 47	2250	47 18 0	2258	49 5 2	2266
	Regulus	E.	37 47 43	2147	35 57 55	2162	34 8 30	2178	32 19 29	2195
	Saturn	E.	90 26 53	2158	88 37 22	2171	86 48 11	2185	84 59 21	2199
	Spica	E.	91 44 25	2126	89 54 5	2139	88 4 6	2153	86 14 28	2167
27	α Arietis	W.	88 22 48	2287	90 9 7	2302	91 55 3	2318	93 40 36	2336
	Jupiter	W.	70 29 0	2213	72 17 8	2229	74 4 53	2244	75 52 15	2260
	Aldebaran	W.	57 56 41	2320	59 42 11	2333	61 27 22	2346	63 12 14	2360
	Saturn	E.	76 0 37	2274	74 14 0	2290	72 27 46	2307	70 41 56	2323
	Spica	E.	77 11 44	2242	75 24 19	2258	73 37 17	2274	71 50 39	2290
	Mars	E.	91 37 36	2450	89 55 12	2466	88 13 11	2483	86 31 34	2499
	Sun	E.	120 29 59	2570	118 50 23	2587	117 11 10	2604	115 32 20	2621
28	α Arietis	W.	102 22 22	2419	104 5 30	2436	105 48 14	2453	107 30 33	2470
	Jupiter	W.	84 43 12	2340	86 28 13	2357	88 12 50	2373	89 57 3	2389
	Aldebaran	W.	71 51 26	2434	73 34 12	2449	75 16 37	2465	76 58 40	2480
	Saturn	E.	61 58 45	2406	60 15 19	2422	58 32 16	2440	56 49 38	2456
	Spica	E.	63 3 26	2372	61 19 11	2389	59 35 20	2405	57 51 52	2422
	Mars	E.	78 9 24	2586	76 30 10	2603	74 51 19	2621	73 12 53	2638
	Sun	E.	107 24 4	2708	105 47 35	2726	104 11 30	2744	102 35 49	2762
29	Jupiter	W.	98 32 20	2470	100 14 15	2487	101 55 47	2502	103 36 57	2518
	Aldebaran	W.	85 23 24	2559	87 3 15	2574	88 42 45	2591	90 21 53	2607
	Pollux	W.	41 29 39	2504	43 10 47	2520	44 51 33	2535	46 31 57	2551
	Saturn	E.	48 22 19	2540	46 42 1	2556	45 2 6	2572	43 22 33	2589
	Spica	E.	49 20 26	2504	47 39 18	2520	45 58 33	2536	44 18 10	2551
	Mars	E.	65 6 32	2725	63 30 24	2741	61 54 40	2759	60 19 18	2775
	Sun	E.	94 43 10	2850	93 9 47	2867	91 36 46	2884	90 4 7	2901
30	Aldebaran	W.	98 32 14	2684	100 9 16	2698	101 45 58	2713	103 22 20	2728
	Pollux	W.	54 48 44	2626	56 27 4	2640	58 5 5	2654	59 42 47	2668
	Saturn	E.	35 10 23	2669	33 33 2	2685	31 56 2	2701	30 19 23	2717
	Spica	E.	36 1 36	2629	34 23 20	2644	32 45 25	2658	31 7 49	2673
	Mars	E.	52 27 49	2856	50 54 34	2872	49 21 39	2887	47 49 3	2902
	Sun	E.	82 26 12	2984	80 55 39	3000	79 25 26	3015	77 55 32	3030

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from / Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	16 31 34.02	10.813	S. 21 53 57.6	-22.80	16 16.01	70.32	10 40.24	0.954
Sat.	2	16 35 53.86	10.840	22 2 52.3	21.75	16 16.15	70.40	10 17.02	0.980
SUN.	3	16 40 14.33	10.866	22 11 21.5	20.68	16 16.28	70.48	9 53.17	1.006
Mon.	4	16 44 35.41	10.891	22 19 25.0	-19.60	16 16.42	70.56	9 28.72	1.031
Tues.	5	16 48 57.08	10.914	22 27 2.4	18.51	16 16.55	70.63	9 3.69	1.055
Wed.	6	16 53 19.28	10.936	22 34 13.6	17.41	16 16.67	70.71	8 38.10	1.077
Thur.	7	16 57 42.02	10.957	22 40 58.2	-16.30	16 16.79	70.77	8 12.00	1.098
Frid.	8	17 2 5.23	10.977	22 47 16.1	15.18	16 16.91	70.84	7 45.41	1.118
Sat.	9	17 6 28.91	10.995	22 53 7.0	14.05	16 17.03	70.89	7 18.37	1.134
SUN.	10	17 10 53.01	11.012	22 58 30.7	-12.92	16 17.14	70.95	6 50.90	1.152
Mon.	11	17 15 17 50	11.027	23 3 27.1	11.78	16 17.25	71.00	6 23.05	1.168
Tues.	12	17 19 42.34	11.041	23 7 56.0	10.63	16 17.36	71.05	5 54.84	1.182
Wed.	13	17 24 7.50	11.054	23 11 57.2	- 9.47	16 17.46	71.09	5 26.33	1.194
Thur.	14	17 28 32.95	11.065	23 15 30.5	8.31	16 17.56	71.13	4 57.52	1.206
Frid.	15	17 32 58.64	11.074	23 18 36.0	7.15	16 17.65	71.16	4 28.46	1.215
Sat.	16	17 37 24.55	11.083	23 21 13.6	- 5.98	16 17.74	71.19	3 59.19	1.223
SUN.	17	17 41 50.64	11.089	23 23 23.0	4.80	16 17.83	71.22	3 29.74	1.230
Mon.	18	17 46 16.88	11.095	23 25 4.2	3.63	16 17.90	71.24	3 0.14	1.236
Tues.	19	17 50 43.24	11.100	23 26 17.3	- 2.46	16 17.98	71.25	2 30.42	1.240
Wed.	20	17 55 9.68	11.103	23 27 2.1	1.28	16 18.04	71.27	2 0.62	1.243
Thur.	21	17 59 36.18	11.105	23 27 18.7	- 0.10	16 18.10	71.27	1 30.76	1.245
Frid.	22	18 4 2.70	11.105	23 27 7.0	+ 1.08	16 18.16	71.28	1 0.88	1.245
Sat.	23	18 8 29.23	11.104	23 26 27.1	2.25	16 18.21	71.27	0 31.00	1.244
SUN.	24	18 12 55.71	11.102	23 25 18.9	3.43	16 18.25	71.27	0 1.16	1.242
Mon.	25	18 17 22.13	11.099	23 23 42.5	+ 4.61	16 18.28	71.26	0 28.63	1.239
Tues.	26	18 21 48.46	11.094	23 21 37.8	5.78	16 18.31	71.24	0 58.32	1.234
Wed.	27	18 26 14.65	11.089	23 19 5.1	6.95	16 18.33	71.22	1 27.87	1.228
Thur.	28	18 30 40.70	11.081	23 16 4.3	+ 8.12	16 18.35	71.19	1 57.28	1.221
Frid.	29	18 35 6.56	11.073	23 12 35.4	9.28	16 18.36	71.16	2 26.50	1.213
Sat.	30	18 39 32.20	11.063	23 8 38.7	10.44	16 18.37	71.13	2 55.50	1.203
SUN.	31	18 43 57.59	11.052	23 4 14.1	11.60	16 18.37	71.09	3 24.25	1.192
Mon.	32	18 48 22.70	11.040	S. 22 59 21.9	+12.76	16 18.36	71.05	3 52.72	1.180

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^{s}.19$ from the sidereal time.
The sign − prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to / Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	16 31 35.94	10.810	S. 21 54 1.6	−22.80	10 40.07	0.954	16 42 16.01
Sat.	2	16 35 55.72	10.837	22 2 56.0	21.74	10 16.85	0.980	16 46 12.57
SUN.	3	16 40 16.12	10.863	22 11 24.9	20.67	9 53.01	1.006	16 50 9.13
Mon.	4	16 44 37.13	10.888	22 19 28.1	−19.59	9 28.56	1.031	16 54 5.69
Tues.	5	16 48 58.72	10.911	22 27 5.2	18.50	9 3.53	1.054	16 58 2.25
Wed.	6	16 53 20.85	10.933	22 34 16.1	17.40	8 37.95	1.077	17 1 58.80
Thur.	7	16 57 43.51	10.954	22 41 0.4	−16.29	8 11.85	1.098	17 5 55.36
Frid.	8	17 2 6.65	10.974	22 47 18.0	15.17	7 45.27	1.117	17 9 51.92
Sat.	9	17 6 30.25	10.992	22 53 8.7	14.05	7 18.23	1.135	17 13 48.48
SUN.	10	17 10 54.27	11.009	22 58 32.2	−12.91	6 50.77	1.152	17 17 45.04
Mon.	11	17 15 18.67	11.024	23 3 28.3	11.77	6 22.93	1.168	17 21 41.60
Tues.	12	17 19 43.43	11.038	23 7 57.0	10.62	5 54.73	1.181	17 25 38.16
Wed.	13	17 24 8.50	11.051	23 11 58.0	− 9.46	5 26.22	1.194	17 29 34.72
Thur.	14	17 28 33.86	11.062	23 15 31.2	8.30	4 57.42	1.205	17 33 31.28
Frid.	15	17 32 59.46	11.071	23 18 36.6	7.14	4 28.37	1.215	17 37 27.83
Sat.	16	17 37 25.28	11.080	23 21 13.9	− 5.97	3 59.11	1.223	17 41 24.39
SUN.	17	17 41 51.28	11.086	23 23 23.2	4.80	3 29.67	1.230	17 45 20.95
Mon.	18	17 46 17.43	11.092	23 25 4.4	3.63	3 0.08	1.235	17 49 17.51
Tues.	19	17 50 43.70	11.096	23 26 17.4	− 2.45	2 30.37	1.240	17 53 14.07
Wed.	20	17 55 10.05	11.099	23 27 2.2	1.28	2 0.58	1.242	17 57 10.63
Thur.	21	17 59 36.46	11.101	23 27 18.7	− 0.10	1 30.73	1.244	18 1 7.19
Frid.	22	18 4 2.89	11.101	23 27 7.0	+ 1.07	1 0.86	1.245	18 5 3.75
Sat.	23	18 8 29.32	11.100	23 26 27.1	2.25	0 30.99	1.244	18 9 0.31
SUN.	24	18 12 55.71	11.098	23 25 18.9	3.43	0 1.16	1.242	18 12 56.87
Mon.	25	18 17 22.04	11.095	23 23 42.5	+ 4.60	0 28.62	1.239	18 16 53.42
Tues.	26	18 21 48.28	11.090	23 21 38.0	5.78	0 58.30	1.234	18 20 49.98
Wed.	27	18 26 14.38	11.085	23 19 5.3	6.95	1 27.84	1.228	18 24 46.54
Thur.	28	18 30 40.34	11.078	23 16 4.6	+ 8.11	1 57.24	1.221	18 28 43.10
Frid.	29	18 35 6.11	11.069	23 12 35.8	9.28	2 26.45	1.212	18 32 39.66
Sat.	30	18 39 31.66	11.059	23 8 39.2	10.44	2 55.44	1.203	18 36 36.22
SUN.	31	18 43 56.96	11.048	23 4 14.8	11.59	3 24.18	1.192	18 40 32.78
Mon.	32	18 48 21.98	11.036	S. 22 59 22.7	+12.74	3 52.64	1.180	18 44 29.34

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign − prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

Diff. for 1 Hour, $+9^s.8565$. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	335	249 34 29.5	33 49.1	152.17	+ 0.11	9.9937222	–26.6	7 16 32.28
2	336	250 35 22.4	34 41.8	152.23	– 0.01	9.9936597	25.7	7 12 36.36
3	337	251 36 16.7	35 35.9	152.29	0.15	9.9935990	25.0	7 8 40.45
4	338	252 37 12.2	36 31.2	152.34	– 0.29	9.9935399	–24.3	7 4 44.54
5	339	253 38 8.9	37 27.7	152.39	0.42	9.9934824	23.6	7 0 48.62
6	340	254 39 6.7	38 25.3	152.43	0.53	9.9934264	23.0	6 56 52.72
7	341	255 40 5.7	39 24.1	152.48	– 0.62	9.9933718	–22.5	6 52 56.80
8	342	256 41 5.7	40 24.0	152.52	0.69	9.9933186	21.9	6 49 0.89
9	343	257 42 6.6	41 24.7	152.55	0.74	9.9932669	21.2	6 45 4.98
10	344	258 43 8.2	42 26.1	152.58	– 0.76	9.9932167	–20.6	6 41 9.06
11	345	259 44 10.5	43 28.2	152.61	0.74	9.9931680	20.0	6 37 13.15
12	346	260 45 13.4	44 30.9	152.63	0.69	9.9931209	19.3	6 33 17.23
13	347	261 46 16.8	45 34.1	152.65	– 0.62	9.9930755	–18.5	6 29 21.32
14	348	262 47 20.7	46 37.8	152.67	0.52	9.9930320	17.7	6 25 25.40
15	349	263 48 25.0	47 41.9	152.69	0.40	9.9929904	16.9	6 21 29.50
16	350	264 49 29.6	48 46.3	152.70	– 0.28	9.9929510	–16.0	6 17 33.59
17	351	265 50 34.5	49 51.0	152.71	– 0.14	9.9929138	15.0	6 13 37.67
18	352	266 51 39.7	50 56.0	152.72	0.00	9.9928790	14.0	6 9 41.76
19	353	267 52 45.2	52 1.3	152.73	+ 0.12	9.9928468	–12.9	6 5 45.84
20	354	268 53 50.9	53 6.8	152.74	0.22	9.9928172	11.8	6 1 49.93
21	355	269 54 56.9	54 12.6	152.76	0.31	9.9927902	10.6	5 57 54.02
22	356	270 56 3.2	55 18.7	152.77	+ 0.38	9.9927661	– 9.5	5 53 58.10
23	357	271 57 9.9	56 25.2	152.79	0.42	9.9927448	8.3	5 50 2.19
24	358	272 58 16.9	57 32.0	152.80	0.42	9.9927263	7.1	5 46 6.27
25	359	273 59 24.3	58 39.2	152.82	+ 0.39	9.9927106	– 6.0	5 42 10.37
26	360	274 60 32.1	59 46.8	152.83	0.33	9.9926977	4.8	5 38 14.46
27	361	276 1 40.3	0 54.8	152.85	0.25	9.9926876	3.6	5 34 18.54
28	362	277 2 48.9	2 3.2	152.87	+ 0.15	9.9926802	– 2.6	5 30 22.63
29	363	278 3 57.9	3 12.0	152.88	+ 0.03	9.9926752	1.6	5 26 26.71
30	364	279 5 7.3	4 21.2	152.90	– 0.10	9.9926726	– 0.6	5 22 30.80
31	365	280 6 17.1	5 30.7	152.91	0.23	9.9926723	+ 0.3	5 18 34.89
32	366	281 7 27.3	6 40.7	152.92	– 0.35	9.9926742	+ 1.2	5 14 38.97

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 29.7	15 23.8	56 45.4	−1.86	56 23.7	−1.74	19 29.6	1.75	23.0
2	15 18.3	15 13.3	56 3.6	1.61	55 45.0	1.48	20 11.4	1.73	24.0
3	15 8.6	15 4.4	55 28.0	1.35	55 12.6	1.22	20 53.3	1.77	25.0
4	15 0.7	14 57.3	54 58.7	−1.09	54 46.4	−0.97	21 36.5	1.84	26.0
5	14 54.3	14 51.7	54 35.5	0.85	54 25.9	0.74	22 21.7	1.93	27.0
6	14 49.5	14 47.6	54 17.7	0.63	54 10.8	0.53	23 9.2	2.03	28 0
7	14 46.1	14 44.9	54 5.1	−0.42	54 0.7	−0.32	23 59.1	2.11	29.0
8	14 44.0	14 43.4	53 57.5	−0.22	53 55.5	−0.11	δ		0.2
9	14 43.3	14 43.5	53 54.9	0.00	53 55.6	+0.12	0 50.2	2.14	1.2
10	14 44.0	14 45.1	53 57.7	+0.24	54 1.4	+0.37	1 41.6	2.13	2.2
11	14 46.5	14 48.4	54 6.6	0.51	54 13.6	0.65	2 31.8	2.06	3.2
12	14 50.7	14 53.7	54 22.3	0.81	54 33.0	0.97	3 20.2	1.97	4.2
13	14 57.1	15 1.1	54 45.6	+1.14	55 0.3	+1.31	4 6.3	1.88	5.2
14	15 5.7	15 10.8	55 17.1	1.49	55 36.0	1.66	4 50.5	1.81	6.2
15	15 16.5	15 22.7	55 56.9	1.83	56 19.8	1.98	5 33.5	1.78	7.2
16	15 29.5	15 36.6	56 44.6	+2.13	57 10.9	+2.25	6 16.5	1.80	8.2
17	15 44.2	15 51.9	57 38.6	2.34	58 7.1	2.40	7 0.6	1.89	9.2
18	15 59.9	16 7.7	58 36.2	2.42	59 5.1	2.38	7 47.6	2.04	10.2
19	16 15.4	16 22.7	59 33.3	+2.29	60 0.1	+2.14	8 38.7	2.25	11.2
20	16 29.4	16 35.3	60 24.6	1.93	60 46.3	1.66	9 35.8	2.50	12.2
21	16 40.2	16 44.0	61 4.4	1.33	61 18.1	0.95	10 38.8	2.74	13.2
22	16 46.4	16 47.5	61 27.1	+0.54	61 31.0	+0.10	11 46.4	2.87	14.2
23	16 47.1	16 45.3	61 29.5	−0.34	61 22.9	−0.76	12 55.0	2.81	15.2
24	16 42.1	16 37.7	61 11.2	1.16	60 55.0	1.52	14 0.3	2.61	16.2
25	16 32.1	16 25.7	60 34.7	−1.83	60 11.2	−2.07	14 59.9	2.35	17.2
26	16 18.6	16 11.0	59 45.1	2.25	59 17.1	2.38	15 53.5	2.11	18.2
27	16 3.1	15 55.1	58 48.1	2.43	58 18.7	2.44	16 41.9	1.94	19.2
28	15 47.2	15 39.4	57 49.5	−2.40	57 21.1	−2.32	17 26.7	1.82	20.2
29	15 32.0	15 25.0	56 53.8	2.21	56 28.0	2.07	18 9.7	1.77	21.2
30	15 18.5	15 12.5	56 4.1	1.91	55 42.1	1.75	18 52.0	1.77	22.2
31	15 7.1	15 2.2	55 22.2	1.57	55 4.5	1.38	19 34.9	1.81	23.2
32	14 58.0	14 54.4	54 49.0	−1.20	54 35.6	−1.03	20 19.3	1.91	24.2

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 38 19.62	1.9151	N. 4 44 33.5	15.225
1	11 40 14.42	1.9118	4 29 19.9	15.228
2	11 42 9.03	1.9086	4 14 6.1	15.230
3	11 44 3.45	1.9054	3 58 52.3	15.231
4	11 45 57.68	1.9022	3 43 38.4	15.232
5	11 47 51.72	1.8992	3 28 24.5	15.230
6	11 49 45.58	1.8962	3 13 10.8	15.228
7	11 51 39.27	1.8935	2 57 57.2	15.225
8	11 53 32.80	1.8907	2 42 43.8	15.222
9	11 55 26.16	1.8880	2 27 30.6	15.218
10	11 57 19.36	1.8855	2 12 17.7	15.212
11	11 59 12.42	1.8832	1 57 5.2	15.204
12	12 1 5.34	1.8808	1 41 53.2	15.196
13	12 2 58.12	1.8785	1 26 41.7	15.188
14	12 4 50.76	1.8763	1 11 30.7	15.179
15	12 6 43.27	1.8742	0 56 20.2	15.169
16	12 8 35.66	1.8722	0 41 10.4	15.157
17	12 10 27.93	1.8702	0 26 1.3	15.145
18	12 12 20.08	1.8684	N. 0 10 53.0	15.132
19	12 14 12.13	1.8667	S. 0 4 14.5	15.117
20	12 16 4.08	1.8650	0 19 21.1	15.102
21	12 17 55.93	1.8634	0 34 26.8	15.087
22	12 19 47.69	1.8619	0 49 31.5	15.070
23	12 21 39.36	1.8605	S. 1 4 35.2	15.053

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 23 30.95	1.8592	S. 1 19 37.9	15.036
1	12 25 22.46	1.8579	1 34 39.5	15.016
2	12 27 13.90	1.8568	1 49 39.8	14.995
3	12 29 5.28	1.8558	2 4 38.9	14.974
4	12 30 56.60	1.8548	2 19 36.7	14.952
5	12 32 47.86	1.8538	2 34 33.2	14.930
6	12 34 39.06	1.8530	2 49 28.3	14.906
7	12 36 30.22	1.8523	3 4 21.9	14.882
8	12 38 21.34	1.8517	3 19 14.1	14.857
9	12 40 12.42	1.8511	3 34 4.8	14.831
10	12 42 3.47	1.8506	3 48 53.9	14.804
11	12 43 54.49	1.8501	4 3 41.3	14.777
12	12 45 45.48	1.8498	4 18 27.1	14.748
13	12 47 36.46	1.8496	4 33 11.1	14.719
14	12 49 27.43	1.8494	4 47 53.4	14.689
15	12 51 18.39	1.8493	5 2 33.8	14.658
16	12 53 9.34	1.8493	5 17 12.3	14.626
17	12 55 0.30	1.8493	5 31 48.9	14.594
18	12 56 51.26	1.8494	5 46 23.6	14.561
19	12 58 42.23	1.8497	6 0 56.2	14.526
20	13 0 33.22	1.8500	6 15 26.7	14.491
21	13 2 24.23	1.8503	6 29 55.2	14.456
22	13 4 15.26	1.8507	6 44 21.5	14.419
23	13 6 6.32	1.8513	6 58 45.5	14.381
24	13 7 57.42	1.8519	S. 7 13 7.2	14.342

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 7 57.42	1.8519	S. 7 13 7.2	14.342
1	13 9 48.55	1.8525	7 27 26.6	14.303
2	13 11 39.72	1.8533	7 41 43.6	14.264
3	13 13 30.94	1.8541	7 55 58.3	14.224
4	13 15 22.21	1.8549	8 10 10.5	14.182
5	13 17 13.53	1.8558	8 24 20.2	14.140
6	13 19 4.91	1.8568	8 38 27.3	14.097
7	13 20 56.35	1.8579	8 52 31.8	14.053
8	13 22 47.86	1.8591	9 6 33.7	14.009
9	13 24 39.44	1.8603	9 20 32.9	13.963
10	13 26 31.09	1.8616	9 34 29.3	13.917
11	13 28 22.83	1.8630	9 48 22.9	13.870
12	13 30 14.65	1.8644	10 2 13.7	13.822
13	13 32 6.56	1.8659	10 16 1.6	13.773
14	13 33 58.56	1.8674	10 29 46.5	13.724
15	13 35 50.65	1.8690	10 43 28.5	13.674
16	13 37 42.84	1.8707	10 57 7.4	13.623
17	13 39 35.13	1.8724	11 10 43.2	13.571
18	13 41 27.53	1.8743	11 24 15.9	13.518
19	13 43 20.04	1.8762	11 37 45.4	13.464
20	13 45 12.67	1.8781	11 51 11.6	13.410
21	13 47 5.41	1.8801	12 4 34.6	13.356
22	13 48 58.28	1.8822	12 17 54.3	13.300
23	13 50 51.27	1.8843	S. 12 31 10.6	13.242

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 52 44.39	1.8864	S. 12 44 23.4	13.184
1	13 54 37.64	1.8887	12 57 32.7	13.126
2	13 56 31.03	1.8910	13 10 38.6	13.068
3	13 58 24.56	1.8933	13 23 40.9	13.008
4	14 0 18.23	1.8957	13 36 39.5	12.947
5	14 2 12.04	1.8981	13 49 34.5	12.886
6	14 4 6.00	1.9006	14 2 25.8	12.823
7	14 6 0.11	1.9032	14 15 13.3	12.760
8	14 7 54.38	1.9058	14 27 57.0	12.696
9	14 9 48.81	1.9085	14 40 36.8	12.631
10	14 11 43.40	1.9112	14 53 12.7	12.565
11	14 13 38.16	1.9140	15 5 44.6	12.499
12	14 15 33.08	1.9168	15 18 12.6	12.432
13	14 17 28.17	1.9197	15 30 36.5	12.363
14	14 19 23.44	1.9226	15 42 56.2	12.294
15	14 21 18.88	1.9255	15 55 11.8	12.224
16	14 23 14.50	1.9285	16 7 23.1	12.153
17	14 25 10.30	1.9315	16 19 30.2	12.082
18	14 27 6.28	1.9346	16 31 33.0	12.010
19	14 29 2.45	1.9377	16 43 31.4	11.937
20	14 30 58.81	1.9409	16 55 25.4	11.863
21	14 32 55.36	1.9442	17 7 14.9	11.788
22	14 34 52.11	1.9474	17 18 59.9	11.713
23	14 36 49.05	1.9507	17 30 40.4	11.637
24	14 38 46.19	1.9540	S. 17 42 16.3	11.559

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 38 46.19	1.9540	S.17 42 16.3	11.559
1	14 40 43.53	1.9574	17 53 47.5	11.480
2	14 42 41.08	1.9608	18 5 13.9	11.401
3	14 44 38.83	1.9642	18 16 35.6	11.322
4	14 46 36.79	1.9677	18 27 52.5	11.241
5	14 48 34.95	1.9711	18 39 4.5	11.159
6	14 50 33.32	1.9746	18 50 11.5	11.076
7	14 52 31.90	1.9782	19 1 13.6	10.993
8	14 54 30.70	1.9818	19 12 10.7	10.909
9	14 56 29.72	1.9855	19 23 2.7	10.824
10	14 58 28.96	1.9891	19 33 49.6	10.738
11	15 0 28.41	1.9927	19 44 31.3	10.651
12	15 2 28.08	1.9964	19 55 7.7	10.564
13	15 4 27.97	2.0001	20 5 38.9	10.476
14	15 6 28.09	2.0038	20 16 4.8	10.387
15	15 8 28.43	2.0076	20 26 25.3	10.297
16	15 10 29.00	2.0113	20 36 40.4	10.206
17	15 12 29.79	2.0151	20 46 50.0	10.113
18	15 14 30.81	2.0189	20 56 54.0	10.020
19	15 16 32.06	2.0227	21 6 52.4	9.927
20	15 18 33.54	2.0265	21 16 45.3	9.834
21	15 20 35.24	2.0303	21 26 32.5	9.738
22	15 22 37.17	2.0342	21 36 13.9	9.642
23	15 24 39.34	2.0381	S.21 45 49.5	9.546

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 26 41.74	2.0419	S.21 55 19.4	9.449
1	15 28 44.37	2.0457	22 4 43.4	9.350
2	15 30 47.23	2.0496	22 14 1.4	9.250
3	15 32 50.32	2.0534	22 23 13.4	9.150
4	15 34 53.64	2.0573	22 32 19.4	9.049
5	15 36 57.19	2.0612	22 41 19.3	8.948
6	15 39 0.98	2.0651	22 50 13.2	8.847
7	15 41 5.00	2.0689	22 59 0.9	8.743
8	15 43 9.25	2.0727	23 7 42.3	8.638
9	15 45 13.73	2.0766	23 16 17.5	8.534
10	15 47 18.44	2.0804	23 24 46.4	8.428
11	15 49 23.38	2.0843	23 33 8.9	8.321
12	15 51 28.55	2.0881	23 41 24.9	8.214
13	15 53 33.95	2.0918	23 49 34.5	8.106
14	15 55 39.57	2.0956	23 57 37.6	7.997
15	15 57 45.42	2.0994	24 5 34.1	7.887
16	15 59 51.50	2.1032	24 13 24.0	7.777
17	16 1 57.80	2.1068	24 21 7.3	7.667
18	16 4 4.32	2.1105	24 28 44.0	7.555
19	16 6 11.06	2.1142	24 36 13.9	7.442
20	16 8 18.02	2.1179	24 43 37.0	7.328
21	16 10 25.21	2.1216	24 50 53.2	7.213
22	16 12 32.61	2.1252	24 58 2.6	7.099
23	16 14 40.23	2.1288	25 5 5.1	6.983
24	16 16 48.06	2.1323	S.25 12 0.6	6.867

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 16 48.06	2.1323	S.25 12 0.6	6.867
1	16 18 56.10	2.1358	25 18 49.1	6.750
2	16 21 4.35	2.1393	25 25 30.6	6.632
3	16 23 12.81	2.1427	25 32 5.0	6.514
4	16 25 21.47	2.1460	25 38 32.3	6.395
5	16 27 30.33	2.1493	25 44 52.4	6.275
6	16 29 39.39	2.1526	25 51 5.3	6.155
7	16 31 48.65	2.1559	25 57 11.0	6.034
8	16 33 58.10	2.1592	26 3 9.4	5.912
9	16 36 7.75	2.1624	26 9 0.4	5.789
10	16 38 17.59	2.1655	26 14 44.1	5.666
11	16 40 27.61	2.1686	26 20 20.4	5.543
12	16 42 37.82	2.1717	26 25 49.3	5.419
13	16 44 48.21	2.1746	26 31 10.7	5.294
14	16 46 58.77	2.1775	26 36 24.6	5.169
15	16 49 9.51	2.1804	26 41 31.0	5.043
16	16 51 20.42	2.1832	26 46 29.8	4.917
17	16 53 31.49	2.1859	26 51 21.0	4.790
18	16 55 42.73	2.1886	26 56 4.6	4.662
19	16 57 54.13	2.1912	27 0 40.5	4.534
20	17 0 5.68	2.1938	27 5 8.7	4.406
21	17 2 17.39	2.1964	27 9 29.2	4.277
22	17 4 29.25	2.1988	27 13 41.9	4.147
23	17 6 41.25	2.2012	S.27 17 46.8	4.017

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 8 53.39	2.2035	S.27 21 44.0	3.887
1	17 11 5.67	2.2057	27 25 33.3	3.756
2	17 13 18.08	2.2079	27 29 14.7	3.625
3	17 15 30.62	2.2100	27 32 48.3	3.493
4	17 17 43.28	2.2120	27 36 13.9	3.361
5	17 19 56.06	2.2140	27 39 31.6	3.228
6	17 22 8.96	2.2159	27 42 41.3	3.095
7	17 24 21.97	2.2177	27 45 43.0	2.962
8	17 26 35.08	2.2194	27 48 36.7	2.828
9	17 28 48.30	2.2211	27 51 22.4	2.695
10	17 31 1.61	2.2226	27 54 0.1	2.561
11	17 33 15.01	2.2241	27 56 29.7	2.426
12	17 35 28.50	2.2255	27 58 51.2	2.291
13	17 37 42.07	2.2268	28 1 4.6	2.156
14	17 39 55.72	2.2281	28 3 9.9	2.021
15	17 42 9.44	2.2293	28 5 7.1	1.886
16	17 44 23.23	2.2304	28 6 56.2	1.750
17	17 46 37.09	2.2314	28 8 37.1	1.613
18	17 48 51.00	2.2323	28 10 9.8	1.477
19	17 51 4.97	2.2332	28 11 34.3	1.341
20	17 53 18.99	2.2339	28 12 50.7	1.205
21	17 55 33.04	2.2345	28 13 58.9	1.068
22	17 57 47.13	2.2351	28 14 58.9	0.931
23	18 0 1.25	2.2357	28 15 50.7	0.794
24	18 2 15.41	2.2361	S.28 16 34.2	0.657

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 9.					MONDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 2 15.41	2.2361	S.28 16 34.2	0.657	0	19 48 30.46	2.1631	S.26 12 33.1	5.710
1	18 4 29.59	2.2364	28 17 9.5	0.520	1	19 50 40.15	2.1599	26 6 46.8	5.832
2	18 6 43.78	2.2367	28 17 36.6	0.383	2	19 52 49.65	2.1568	26 0 53.2	5.954
3	18 8 57.99	2.2368	28 17 55.5	0.246	3	19 54 58.97	2.1537	25 54 52.3	6.076
4	18 11 12.20	2.2368	28 18 6.1	− 0.108	4	19 57 8.10	2.1505	25 48 44.1	6.197
5	18 13 26.41	2.2368	28 18 8.5	+ 0.028	5	19 59 17.03	2.1473	25 42 28.7	6.317
6	18 15 40.62	2.2367	28 18 2.7	0.165	6	20 1 25.77	2.1440	25 36 6.0	6.437
7	18 17 54.82	2.2365	28 17 48.7	0.302	7	20 3 34.31	2.1407	25 29 36.2	6.556
8	18 20 9.00	2.2363	28 17 26.5	0.439	8	20 5 42.65	2.1374	25 22 59.3	6.674
9	18 22 23.17	2.2360	28 16 56.1	0.576	9	20 7 50.80	2.1341	25 16 15.3	6.792
10	18 24 37.32	2.2355	28 16 17.4	0.713	10	20 9 58.74	2.1306	25 9 24.2	6.909
11	18 26 51.43	2.2349	28 15 30.5	0.850	11	20 12 6.47	2.1272	25 2 26.2	7.025
12	18 29 5.51	2.2343	28 14 35.4	0.987	12	20 14 14.00	2.1237	24 55 21.2	7.141
13	18 31 19.55	2.2337	28 13 32.1	1.123	13	20 16 21.32	2.1202	24 48 9.3	7.256
14	18 33 33.55	2.2329	28 12 20.6	1.259	14	20 18 28.43	2.1168	24 40 50.5	7.371
15	18 35 47.50	2.2321	28 11 1.0	1.395	15	20 20 35.34	2.1134	24 33 24.8	7.484
16	18 38 1.40	2.2311	28 9 33.2	1.532	16	20 22 42.04	2.1098	24 25 52.4	7.597
17	18 40 15.23	2.2300	28 7 57.2	1.668	17	20 24 48.52	2.1062	24 18 13.2	7.709
18	18 42 29.00	2.2289	28 6 13.0	1.804	18	20 26 54.79	2.1027	24 10 27.3	7.821
19	18 44 42.70	2.2277	28 4 20.7	1.939	19	20 29 0.85	2.0992	24 2 34.7	7.932
20	18 46 56.33	2.2265	28 2 20.3	2.074	20	20 31 6.69	2.0956	23 54 35.5	8.042
21	18 49 9.88	2.2252	28 0 11.8	2.209	21	20 33 12.32	2.0921	23 46 29.7	8.151
22	18 51 23.35	2.2238	27 57 55.2	2.344	22	20 35 17.74	2.0885	23 38 17.4	8.259
23	18 53 36.73	2.2222	S.27 55 30.5	2.479	23	20 37 22.94	2.0848	S.23 29 58.6	8.367
	SUNDAY 10.					TUESDAY 12.			
0	18 55 50.01	2.2206	S.27 52 57.7	2.613	0	20 39 27.92	2.0812	S.23 21 33.3	8.475
1	18 58 3.20	2.2190	27 50 16.9	2.747	1	20 41 32.69	2.0776	23 13 1.6	8.582
2	19 0 16.29	2.2172	27 47 28.1	2.880	2	20 43 37.24	2.0740	23 4 23.5	8.687
3	19 2 29.27	2.2154	27 44 31.3	3.013	3	20 45 41.57	2.0704	22 55 39.1	8.792
4	19 4 42.14	2.2136	27 41 26.5	3.146	4	20 47 45.69	2.0668	22 46 48.4	8.897
5	19 6 54.90	2.2117	27 38 13.7	3.279	5	20 49 49.59	2.0632	22 37 51.5	9.000
6	19 9 7.55	2.2097	27 34 53.0	3.411	6	20 51 53.27	2.0596	22 28 48.4	9.103
7	19 11 20.07	2.2076	27 31 24.4	3.543	7	20 53 56.74	2.0561	22 19 39.1	9.205
8	19 13 32.46	2.2054	27 27 47.9	3.674	8	20 56 0.00	2.0525	22 10 23.8	9.306
9	19 15 44.72	2.2032	27 24 3.5	3.805	9	20 58 3.04	2.0489	22 1 2.4	9.407
10	19 17 56.84	2.2009	27 20 11.3	3.935	10	21 0 5.87	2.0453	21 51 35.0	9.507
11	19 20 8.83	2.1986	27 16 11.3	4.065	11	21 2 8.48	2.0417	21 42 1.6	9.607
12	19 22 20.68	2.1962	27 12 3.5	4.195	12	21 4 10.88	2.0382	21 32 22.2	9.706
13	19 24 32.38	2.1937	27 7 47.9	4.324	13	21 6 13.07	2.0347	21 22 36.9	9.802
14	19 26 43.93	2.1912	27 3 24.6	4.453	14	21 8 15.05	2.0312	21 12 45.9	9.898
15	19 28 55.32	2.1886	26 58 53.6	4.581	15	21 10 16.82	2.0277	21 2 49.1	9.994
16	19 31 6.56	2.1860	26 54 14.9	4.708	16	21 12 18.38	2.0243	20 52 46.6	10.090
17	19 33 17.64	2.1833	26 49 28.6	4.835	17	21 14 19.74	2.0209	20 42 38.3	10.185
18	19 35 28.56	2.1806	26 44 34.7	4.962	18	21 16 20.89	2.0174	20 32 24.3	10.280
19	19 37 39.31	2.1778	26 39 33.2	5.088	19	21 18 21.83	2.0140	20 22 4.7	10.372
20	19 39 49.89	2.1749	26 34 24.2	5.213	20	21 20 22.57	2.0107	20 11 39.6	10.464
21	19 42 0.30	2.1720	26 29 7.6	5.339	21	21 22 23.11	2.0073	20 1 9.0	10.556
22	19 44 10.53	2.1690	26 23 43.5	5.463	22	21 24 23.45	2.0040	19 50 32.9	10.647
23	19 46 20.58	2.1661	26 18 12.0	5.587	23	21 26 23.59	2.0007	19 39 51.4	10.737
24	19 48 30.46	2.1631	S.26 12 33.1	5.710	24	21 28 23.54	1.9975	S.19 29 4.5	10.827

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 28 23.54	1.9975	S. 19 29 4.5	10.827
1	21 30 23.29	1.9943	19 18 12.2	10.915
2	21 32 22.85	1.9911	19 7 14.7	11.003
3	21 34 22.22	1.9879	18 56 11.9	11.090
4	21 36 21.40	1.9847	18 45 3.9	11.176
5	21 38 20.39	1.9817	18 33 50.8	11.261
6	21 40 19.20	1.9787	18 22 32.6	11.346
7	21 42 17.83	1.9757	18 11 9.3	11.430
8	21 44 16.28	1.9727	17 59 41.0	11.513
9	21 46 14.55	1.9697	17 48 7.7	11.596
10	21 48 12.65	1.9668	17 36 29.4	11.678
11	21 50 10.57	1.9639	17 24 46.3	11.758
12	21 52 8.32	1.9612	17 12 58.4	11.838
13	21 54 5.91	1.9584	17 1 5.7	11.918
14	21 56 3.33	1.9557	16 49 8.2	11.998
15	21 58 0.59	1.9530	16 37 6.0	12.076
16	21 59 57.69	1.9504	16 24 59.1	12.152
17	22 1 54.64	1.9478	16 12 47.7	12.228
18	22 3 51.43	1.9452	16 0 31.7	12.304
19	22 5 48.07	1.9428	15 48 11.2	12.379
20	22 7 44.57	1.9405	15 35 46.2	12.454
21	22 9 40.93	1.9382	15 23 16.7	12.527
22	22 11 37.15	1.9358	15 10 42.9	12.600
23	22 13 33.23	1.9335	S. 14 58 4.7	12.672

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 15 29.17	1.9313	S. 14 45 22.2	12.744
1	22 17 24.99	1.9292	14 32 35.4	12.814
2	22 19 20.68	1.9271	14 19 44.5	12.883
3	22 21 16.24	1.9250	14 6 49.4	12.952
4	22 23 11.68	1.9231	13 53 50.2	13.021
5	22 25 7.01	1.9212	13 40 46.9	13.088
6	22 27 2.23	1.9194	13 27 39.6	13.155
7	22 28 57.34	1.9176	13 14 28.3	13.222
8	22 30 52.34	1.9158	13 1 13.0	13.287
9	22 32 47.24	1.9142	12 47 53.8	13.352
10	22 34 42.05	1.9126	12 34 30.8	13.415
11	22 36 36.76	1.9111	12 21 4.0	13.478
12	22 38 31.38	1.9097	12 7 33.4	13.541
13	22 40 25.92	1.9082	11 53 59.1	13.602
14	22 42 20.37	1.9068	11 40 21.1	13.663
15	22 44 14.74	1.9056	11 26 39.5	13.723
16	22 46 9.04	1.9045	11 12 54.3	13.782
17	22 48 3.28	1.9034	10 59 5.6	13.841
18	22 49 57.45	1.9023	10 45 13.4	13.899
19	22 51 51.56	1.9013	10 31 17.7	13.956
20	22 53 45.61	1.9004	10 17 18.7	14.012
21	22 55 39.61	1.8996	10 3 16.3	14.067
22	22 57 33.56	1.8988	9 49 10.6	14.122
23	22 59 27.47	1.8981	9 35 1.6	14.177
24	23 1 21.33	1.8974	S. 9 20 49.4	14.230

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 1 21.33	1.8974	S. 9 20 49.4	14.230
1	23 3 15.16	1.8969	9 6 34.0	14.282
2	23 5 8.96	1.8965	8 52 15.5	14.334
3	23 7 2.74	1.8961	8 37 53.9	14.385
4	23 8 56.49	1.8958	8 23 29.3	14.435
5	23 10 50.23	1.8955	8 9 1.7	14.484
6	23 12 43.95	1.8953	7 54 31.2	14.533
7	23 14 37.66	1.8952	7 39 57.8	14.581
8	23 16 31.38	1.8953	7 25 21.5	14.628
9	23 18 25.10	1.8953	7 10 42.4	14.675
10	23 20 18.82	1.8955	6 56 0.5	14.720
11	23 22 12.56	1.8957	6 41 16.0	14.764
12	23 24 6.31	1.8960	6 26 28.8	14.808
13	23 26 0.08	1.8964	6 11 39.0	14.852
14	23 27 53.88	1.8970	5 56 46.6	14.894
15	23 29 47.72	1.8976	5 41 51.7	14.935
16	23 31 41.59	1.8982	5 26 54.4	14.975
17	23 33 35.50	1.8988	5 11 54.7	15.015
18	23 35 29.45	1.8997	4 56 52.6	15.054
19	23 37 23.46	1.9006	4 41 48.2	15.092
20	23 39 17.52	1.9015	4 26 41.6	15.129
21	23 41 11.64	1.9026	4 11 32.7	15.166
22	23 43 5.83	1.9038	3 56 21.6	15.202
23	23 45 0.10	1.9051	S. 3 41 8.5	15.236

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 46 54.44	1.9063	S. 3 25 53.3	15.270
1	23 48 48.86	1.9077	3 10 36.1	15.303
2	23 50 43.37	1.9093	2 55 17.0	15.335
3	23 52 37.98	1.9110	2 39 55.9	15.367
4	23 54 32.69	1.9127	2 24 33.0	15.397
5	23 56 27.50	1.9144	2 9 8.3	15.426
6	23 58 22.41	1.9162	1 53 41.9	15.454
7	0 0 17.44	1.9182	1 38 13.8	15.482
8	0 2 12.59	1.9202	1 22 44.1	15.508
9	0 4 7.87	1.9224	1 7 12.8	15.534
10	0 6 3.28	1.9247	0 51 40.0	15.558
11	0 7 58.83	1.9270	0 36 5.8	15.582
12	0 9 54.52	1.9294	0 20 30.2	15.605
13	0 11 50.36	1.9319	S. 0 4 53.2	15.627
14	0 13 46.35	1.9345	N. 0 10 45.1	15.647
15	0 15 42.50	1.9373	0 26 24.5	15.667
16	0 17 38.82	1.9401	0 42 5.1	15.686
17	0 19 35.31	1.9429	0 57 46.8	15.703
18	0 21 31.97	1.9459	1 13 29.5	15.719
19	0 23 28.81	1.9490	1 29 13.1	15.735
20	0 25 25.85	1.9522	1 44 57.7	15.751
21	0 27 23.08	1.9555	2 0 43.2	15.765
22	0 29 20.51	1.9589	2 16 29.5	15.777
23	0 31 18.15	1.9623	2 32 16.4	15.787
24	0 33 15.99	1.9658	N. 2 48 3.9	15.797

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
SUNDAY 17.					**TUESDAY 19.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 33 15.99	1.9658	N. 2 48 3.9	15.797	0	2 13 39.84	2.2553	N.15 13 4.4	14.653
1	0 35 14.05	1.9696	3 3 52.0	15.807	1	2 15 55.41	2.2637	15 27 41.7	14.587
2	0 37 12.34	1.9734	3 19 40.7	15.815	2	2 18 11.49	2.2722	15 42 14.9	14.519
3	0 39 10.86	1.9773	3 35 29.8	15.821	3	2 20 28.07	2.2806	15 56 44.0	14.449
4	0 41 9.62	1.9813	3 51 19.2	15.827	4	2 22 45.16	2.2892	16 11 8.8	14.377
5	0 43 8.62	1.9853	4 7 9.0	15.832	5	2 25 2.77	2.2979	16 25 29.3	14.304
6	0 45 7.86	1.9895	4 22 59.0	15.835	6	2 27 20.91	2.3067	16 39 45.3	14.228
7	0 47 7.36	1.9938	4 38 49.2	15.837	7	2 29 39.57	2.3154	16 53 56.7	14.150
8	0 49 7.12	1.9982	4 54 39.4	15.837	8	2 31 58.76	2.3243	17 8 3.3	14.069
9	0 51 7.14	2.0026	5 10 29.6	15.836	9	2 34 18.49	2.3333	17 22 5.0	13.987
10	0 53 7.43	2.0072	5 26 19.7	15.834	10	2 36 38.76	2.3423	17 36 1.7	13.903
11	0 55 8.00	2.0119	5 42 9.7	15.832	11	2 38 59.57	2.3513	17 49 53.3	13.816
12	0 57 8.86	2.0167	5 57 59.5	15.828	12	2 41 20.92	2.3604	18 3 39.6	13.727
13	0 59 10.01	2.0216	6 13 49.0	15.822	13	2 43 42.82	2.3696	18 17 20.5	13.636
14	1 1 11.45	2.0265	6 29 38.1	15.814	14	2 46 5.28	2.3789	18 30 55.8	13.541
15	1 3 13.19	2.0316	6 45 26.7	15.806	15	2 48 28.29	2.3882	18 44 25.4	13.445
16	1 5 15.24	2.0369	7 1 14.8	15.797	16	2 50 51.86	2.3975	18 57 49.2	13.347
17	1 7 17.61	2.0422	7 17 2.3	15.786	17	2 53 15.99	2.4069	19 11 7.0	13.246
18	1 9 20.30	2.0475	7 32 49.1	15.773	18	2 55 40.69	2.4163	19 24 18.7	13.143
19	1 11 23.31	2.0530	7 48 35.1	15.759	19	2 58 5.95	2.4257	19 37 24.2	13.037
20	1 13 26.66	2.0586	8 4 20.2	15.744	20	3 0 31.78	2.4352	19 50 23.2	12.929
21	1 15 30.35	2.0643	8 20 4.4	15.727	21	3 2 58.18	2.4448	20 3 15.7	12.820
22	1 17 34.38	2.0701	8 35 47.5	15.709	22	3 5 25.16	2.4544	20 16 1.6	12.708
23	1 19 38.76	2.0760	N. 8 51 29.5	15.689	23	3 7 52.71	2.4639	N.20 28 40.6	12.593
MONDAY 18.					**WEDNESDAY 20.**				
0	1 21 43.50	2.0820	N. 9 7 10.2	15.667	0	3 10 20.83	2.4735	N.20 41 12.7	12.476
1	1 23 48.60	2.0881	9 22 49.6	15.645	1	3 12 49.53	2.4832	20 53 37.7	12.356
2	1 25 54.07	2.0943	9 38 27.6	15.621	2	3 15 18.81	2.4928	21 5 55.4	12.233
3	1 27 59.92	2.1007	9 54 4.1	15.595	3	3 17 48.67	2.5025	21 18 5.7	12.109
4	1 30 6.15	2.1071	10 9 39.0	15.568	4	3 20 19.11	2.5121	21 30 8.5	11.982
5	1 32 12.77	2.1136	10 25 12.2	15.539	5	3 22 50.13	2.5217	21 42 3.6	11.852
6	1 34 19.78	2.1202	10 40 43.7	15.508	6	3 25 21.72	2.5313	21 53 50.8	11.720
7	1 36 27.19	2.1269	10 56 13.2	15.475	7	3 27 53.89	2.5410	22 5 30.0	11.586
8	1 38 35.01	2.1337	11 11 40.7	15.442	8	3 30 26.64	2.5507	22 17 1.1	11.450
9	1 40 43.23	2.1405	11 27 6.2	15.406	9	3 32 59.97	2.5603	22 28 24.0	11.311
10	1 42 51.87	2.1476	11 42 29.4	15.368	10	3 35 33.87	2.5698	22 39 38.4	11.169
11	1 45 0.94	2.1547	11 57 50.3	15.329	11	3 38 8.35	2.5794	22 50 44.3	11.026
12	1 47 10.43	2.1618	12 13 8.9	15.289	12	3 40 43.40	2.5889	23 1 41.5	10.879
13	1 49 20.35	2.1691	12 28 25.0	15.246	13	3 43 19.02	2.5984	23 12 29.8	10.730
14	1 51 30.72	2.1766	12 43 38.4	15.201	14	3 45 55.21	2.6079	23 23 9.1	10.578
15	1 53 41.54	2.1841	12 58 49.1	15.155	15	3 48 31.97	2.6173	23 33 39.2	10.424
16	1 55 52.81	2.1917	13 13 57.0	15.107	16	3 51 9.29	2.6266	23 44 0.0	10.268
17	1 58 4.54	2.1993	13 29 1.9	15.057	17	3 53 47.16	2.6358	23 54 11.4	10.110
18	2 0 16.72	2.2069	13 44 3.8	15.005	18	3 56 25.59	2.6451	24 4 13.2	9.949
19	2 2 29.37	2.2147	13 59 2.5	14.951	19	3 59 4.57	2.6543	24 14 5.3	9.786
20	2 4 42.49	2.2227	14 13 57.9	14.895	20	4 1 44.10	2.6633	24 23 47.5	9.620
21	2 6 56.10	2.2308	14 28 49.9	14.837	21	4 4 24.17	2.6723	24 33 19.7	9.452
22	2 9 10.19	2.2389	14 43 38.1	14.778	22	4 7 4.78	2.6812	24 42 41.8	9.281
23	2 11 24.77	2.2471	14 58 23.3	14.717	23	4 9 45.92	2.6900	24 51 53.5	9.108
24	2 13 39.84	2.2553	N.15 13 4.4	14.653	24	4 12 27.58	2.6987	N.25 0 54.8	8.934

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 21.					**SATURDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 12 27.58	2.6987	N.25 0 54.8	8.934	0	6 28 50.27	2.8976	N.28 13 52.1	1.336
1	4 15 9.76	2.7073	25 9 45.6	8.757	1	6 31 44.07	2.8957	28 12 25.1	1.565
2	4 17 52.46	2.7158	25 18 25.7	8.578	2	6 34 37.75	2.8935	28 10 44.3	1.794
3	4 20 35.66	2.7242	25 26 54.9	8.396	3	6 37 31.29	2.8911	28 8 49.8	2.022
4	4 23 19.36	2.7324	25 35 13.2	8.212	4	6 40 24.68	2.8883	28 6 41.7	2.249
5	4 26 3.55	2.7406	25 43 20.4	8.026	5	6 43 17.89	2.8853	28 4 19.9	2.476
6	4 28 48.23	2.7486	25 51 16.3	7.838	6	6 46 10.92	2.8822	28 1 44.6	2.701
7	4 31 33.38	2.7564	25 59 0.9	7.648	7	6 49 3.75	2.8787	27 58 55.8	2.926
8	4 34 19.00	2.7642	26 6 34.0	7.456	8	6 51 56.36	2.8750	27 55 53.5	3.149
9	4 37 5.08	2.7718	26 13 55.6	7.262	9	6 54 48.75	2.8711	27 52 37.9	3.372
10	4 39 51.61	2.7792	26 21 5.4	7.065	10	6 57 40.89	2.8668	27 49 8.9	3.594
11	4 42 38.58	2.7863	26 28 3.4	6.867	11	7 0 32.77	2.8624	27 45 26.6	3.814
12	4 45 25.97	2.7933	26 34 49.4	6.666	12	7 3 24.38	2.8577	27 41 31.2	4.033
13	4 48 13.78	2.8003	26 41 23.3	6.464	13	7 6 15.70	2.8528	27 37 22.7	4.251
14	4 51 2.01	2.8071	26 47 45.1	6.261	14	7 9 6.71	2.8476	27 33 1.1	4.468
15	4 53 50.63	2.8136	26 53 54.6	6.055	15	7 11 57.41	2.8423	27 28 26.5	4.684
16	4 56 39.64	2.8199	26 59 51.7	5.847	16	7 14 47.78	2.8367	27 23 39.0	4.897
17	4 59 29.02	2.8261	27 5 36.3	5.639	17	7 17 37.81	2.8309	27 18 38.8	5.108
18	5 2 18.77	2.8321	27 11 8.4	5.429	18	7 20 27.49	2.8249	27 13 26.0	5.318
19	5 5 8.87	2.8378	27 16 27.8	5.217	19	7 23 16.80	2.8187	27 8 0.6	5.528
20	5 7 59.30	2.8433	27 21 34.4	5.003	20	7 26 5.73	2.8123	27 2 22.6	5.737
21	5 10 50.06	2.8486	27 26 28.1	4.788	21	7 28 54.28	2.8057	26 56 32.2	5.943
22	5 13 41.13	2.8537	27 31 8.9	4.571	22	7 31 42.42	2.7989	26 50 29.5	6.146
23	5 16 32.50	2.8586	N.27 35 36.6	4.352	23	7 34 30.15	2.7919	N.26 44 14.7	6.347
	FRIDAY 22.					**SUNDAY 24.**			
0	5 19 24.16	2.8633	N.27 39 51.2	4.133	0	7 37 17.45	2.7848	N.26 37 47.8	6.548
1	5 22 16.09	2.8676	27 43 52.6	3.913	1	7 40 4.32	2.7775	26 31 8.9	6.747
2	5 25 8.27	2.8718	27 47 40.8	3.692	2	7 42 50.75	2.7700	26 24 18.2	6.943
3	5 28 0.70	2.8757	27 51 15.6	3.469	3	7 45 36.72	2.7624	26 17 15.8	7.137
4	5 30 53.36	2.8793	27 54 37.0	3.245	4	7 48 22.23	2.7547	26 10 1.7	7.330
5	5 33 46.22	2.8827	27 57 45.0	3.021	5	7 51 7.28	2.7468	26 2 36.2	7.520
6	5 36 39.28	2.8859	28 0 39.5	2.795	6	7 53 51.84	2.7386	25 54 59.3	7.709
7	5 39 32.53	2.8888	28 3 20.4	2.568	7	7 56 35.91	2.7304	25 47 11.1	7.896
8	5 42 25.94	2.8914	28 5 47.7	2.341	8	7 59 19.49	2.7221	25 39 11.9	8.078
9	5 45 19.50	2.8938	28 8 1.3	2.113	9	8 2 2.56	2.7136	25 31 1.7	8.261
10	5 48 13.20	2.8960	28 10 1.3	1.885	10	8 4 45.12	2.7050	25 22 40.6	8.441
11	5 51 7.02	2.8979	28 11 47.5	1.656	11	8 7 27.16	2.6963	25 14 8.8	8.618
12	5 54 0.95	2.8996	28 13 20.0	1.427	12	8 10 8.68	2.6875	25 5 26.4	8.793
13	5 56 54.97	2.9009	28 14 38.7	1.197	13	8 12 49.66	2.6786	24 56 33.6	8.966
14	5 59 49.05	2.9018	28 15 43.6	0.967	14	8 15 30.11	2.6697	24 47 30.5	9.137
15	6 2 43.19	2.9026	28 16 34.7	0.736	15	8 18 10.02	2.6606	24 38 17.2	9.305
16	6 5 37.37	2.9032	28 17 11.9	0.505	16	8 20 49.38	2.6514	24 28 53.9	9.471
17	6 8 31.57	2.9034	28 17 35.3	0.275	17	8 23 28.18	2.6421	24 19 20.7	9.635
18	6 11 25.78	2.9034	28 17 44.9	+ 0.044	18	8 26 6.43	2.6328	24 9 37.7	9.796
19	6 14 19.98	2.9032	28 17 40.6	− 0.187	19	8 28 44.12	2.6234	23 59 45.1	9.955
20	6 17 14.16	2.9026	28 17 22.5	0.417	20	8 31 21.24	2.6140	23 49 43.1	10.112
21	6 20 8.29	2.9017	28 16 50.6	0.647	21	8 33 57.80	2.6046	23 39 31.7	10.266
22	6 23 2.36	2.9006	28 16 4.9	0.877	22	8 36 33.79	2.5950	23 29 11.2	10.418
23	6 25 56.36	2.8992	28 15 5.4	1.107	23	8 39 9.20	2.5853	23 18 41.6	10.567
24	6 28 50.27	2.8976	N.28 13 52.1	1.336	24	8 41 44.03	2.5757	N.23 8 3.1	10.714

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 41 44.03	2.5757	N.23 8 3.1	10.714
1	8 44 18.29	2.5661	22 57 15.9	10.858
2	8 46 51.97	2.5564	22 46 20.1	11.001
3	8 49 25.06	2.5467	22 35 15.8	11.141
4	8 51 57.57	2.5370	22 24 3.2	11.278
5	8 54 29.50	2.5272	22 12 42.5	11.413
6	8 57 0.84	2.5175	22 1 13.7	11.545
7	8 59 31.60	2.5077	21 49 37.1	11.674
8	9 2 1.77	2.4979	21 37 52.8	11.802
9	9 4 31.35	2.4882	21 26 0.8	11.926
10	9 7 0.35	2.4785	21 14 1.4	12.051
11	9 9 28.77	2.4687	21 1 54.7	12.171
12	9 11 56.60	2.4590	20 49 40.9	12.289
13	9 14 23.85	2.4493	20 37 20.1	12.404
14	9 16 50.52	2.4397	20 24 52.4	12.517
15	9 19 16.61	2.4300	20 12 18.0	12.628
16	9 21 42.12	2.4203	19 59 37.0	12.737
17	9 24 7.05	2.4107	19 46 49.6	12.843
18	9 26 31.41	2.4012	19 33 55.8	12.947
19	9 28 55.20	2.3917	19 20 55.9	13.048
20	9 31 18.42	2.3822	19 7 50.0	13.148
21	9 33 41.07	2.3728	18 54 38.1	13.246
22	9 36 3.16	2.3635	18 41 20.5	13.340
23	9 38 24.69	2.3542	N.18 27 57.3	13.432

TUESDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 40 45.67	2.3450	N.18 14 28.7	13.522
1	9 43 6.09	2.3358	18 0 54.7	13.610
2	9 45 25.96	2.3266	17 47 15.5	13.697
3	9 47 45.28	2.3175	17 33 31.1	13.781
4	9 50 4.06	2.3085	17 19 41.8	13.862
5	9 52 22.30	2.2996	17 5 47.7	13.942
6	9 54 40.01	2.2907	16 51 48.8	14.019
7	9 56 57.19	2.2819	16 37 45.4	14.093
8	9 59 13.84	2.2732	16 23 37.6	14.167
9	10 1 29.97	2.2646	16 9 25.4	14.238
10	10 3 45.59	2.2560	15 55 9.0	14.307
11	10 6 0.69	2.2474	15 40 48.5	14.374
12	10 8 15.28	2.2390	15 26 24.1	14.439
13	10 10 29.37	2.2307	15 11 55.8	14.502
14	10 12 42.97	2.2225	14 57 23.8	14.563
15	10 14 56.07	2.2143	14 42 48.2	14.622
16	10 17 8.68	2.2062	14 28 9.1	14.680
17	10 19 20.82	2.1983	14 13 26.6	14.735
18	10 21 32.48	2.1904	13 58 40.9	14.788
19	10 23 43.67	2.1826	13 43 52.0	14.841
20	10 25 54.39	2.1748	13 29 0.0	14.891
21	10 28 4.65	2.1672	13 14 5.1	14.938
22	10 30 14.46	2.1597	12 59 7.4	14.984
23	10 32 23.82	2.1523	12 44 7.0	15.029
24	10 34 32.74	2.1450	N.12 29 3.9	15.072

WEDNESDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 34 32.74	2.1450	N.12 29 3.9	15.072
1	10 36 41.22	2.1377	12 13 58.4	15.113
2	10 38 49.27	2.1306	11 58 50.4	15.152
3	10 40 56.89	2.1235	11 43 40.1	15.190
4	10 43 4.09	2.1166	11 28 27.6	15.226
5	10 45 10.88	2.1097	11 13 13.0	15.260
6	10 47 17.26	2.1030	10 57 56.4	15.292
7	10 49 23.24	2.0963	10 42 37.9	15.324
8	10 51 28.82	2.0897	10 27 17.5	15.354
9	10 53 34.01	2.0833	10 11 55.4	15.382
10	10 55 38.82	2.0770	9 56 31.7	15.408
11	10 57 43.25	2.0707	9 41 6.5	15.433
12	10 59 47.31	2.0646	9 25 39.8	15.457
13	11 1 51.00	2.0585	9 10 11.7	15.478
14	11 3 54.33	2.0526	8 54 42.4	15.498
15	11 5 57.31	2.0467	8 39 11.9	15.518
16	11 7 59.94	2.0409	8 23 40.3	15.536
17	11 10 2.22	2.0352	8 8 7.6	15.552
18	11 12 4.17	2.0297	7 52 34.0	15.567
19	11 14 5.79	2.0243	7 36 59.6	15.580
20	11 16 7.09	2.0190	7 21 24.4	15.593
21	11 18 8.07	2.0138	7 5 48.5	15.604
22	11 20 8.74	2.0087	6 50 11.9	15.613
23	11 22 9.11	2.0036	N. 6 34 34.9	15.620

THURSDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 24 9.17	1.9986	N. 6 18 57.5	15.627
1	11 26 8.94	1.9938	6 3 19.7	15.633
2	11 28 8.43	1.9891	5 47 41.5	15.638
3	11 30 7.63	1.9844	5 32 3.1	15.642
4	11 32 6.56	1.9799	5 16 24.5	15.643
5	11 34 5.22	1.9755	5 0 45.9	15.643
6	11 36 3.62	1.9712	4 45 7.3	15.643
7	11 38 1.76	1.9669	4 29 28.7	15.641
8	11 39 59.65	1.9628	4 13 50.3	15.638
9	11 41 57.30	1.9588	3 58 12.1	15.635
10	11 43 54.71	1.9548	3 42 34.1	15.631
11	11 45 51.88	1.9509	3 26 56.4	15.624
12	11 47 48.82	1.9472	3 11 19.2	15.617
13	11 49 45.54	1.9436	2 55 42.4	15.609
14	11 51 42.05	1.9401	2 40 6.1	15.599
15	11 53 38.35	1.9367	2 24 30.5	15.588
16	11 55 34.45	1.9333	2 8 55.5	15.577
17	11 57 30.35	1.9301	1 53 21.2	15.565
18	11 59 26.06	1.9269	1 37 47.7	15.551
19	12 1 21.58	1.9238	1 22 15.1	15.537
20	12 3 16.92	1.9209	1 6 43.3	15.521
21	12 5 12.09	1.9181	0 51 12.5	15.504
22	12 7 7.09	1.9153	0 35 42.8	15.487
23	12 9 1.92	1.9126	0 20 14.1	15.469
24	12 10 56.60	1.9101	N. 0 4 46.5	15.450

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 10 56.60	1.9101	N. 0 4 46.5	15.450
1	12 12 51.13	1.9076	S. 0 10 39.9	15.429
2	12 14 45.51	1.9051	0 26 5.0	15.407
3	12 16 39.74	1.9028	0 41 28.8	15.385
4	12 18 33.84	1.9007	0 56 51.2	15.362
5	12 20 27.82	1.8986	1 12 12.2	15.338
6	12 22 21.67	1.8965	1 27 31.8	15.313
7	12 24 15.40	1.8946	1 42 49.8	15.287
8	12 26 9.02	1.8927	1 58 6.3	15.261
9	12 28 2.52	1.8908	2 13 21.1	15.233
10	12 29 55.92	1.8892	2 28 34.2	15.204
11	12 31 49.23	1.8877	2 43 45.6	15.176
12	12 33 42.45	1.8862	2 58 55.3	15.146
13	12 35 35.58	1.8848	3 14 3.1	15.114
14	12 37 28.63	1.8835	3 29 9.0	15.082
15	12 39 21.60	1.8823	3 44 12.9	15.049
16	12 41 14.50	1.8812	3 59 14.9	15.016
17	12 43 7.34	1.8801	4 14 14.8	14.982
18	12 45 0.11	1.8790	4 29 12.7	14.947
19	12 46 52.82	1.8782	4 44 8.4	14.910
20	12 48 45.49	1.8775	4 59 1.9	14.873
21	12 50 38.12	1.8768	5 13 53.2	14.836
22	12 52 30.71	1.8762	5 28 42.2	14.797
23	12 54 23.26	1.8756	S. 5 43 28.9	14.758

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 56 15.78	1.8751	S. 5 58 13.2	14.718
1	12 58 8.27	1.8747	6 12 55.1	14.677
2	13 0 0.75	1.8745	6 27 34.5	14.636
3	13 1 53.21	1.8743	6 42 11.4	14.594
4	13 3 45.66	1.8741	6 56 45.8	14.551
5	13 5 38.10	1.8740	7 11 17.5	14.507
6	13 7 30.54	1.8741	7 25 46.6	14.462
7	13 9 22.99	1.8742	7 40 13.0	14.417
8	13 11 15.44	1.8743	7 54 36.6	14.371
9	13 13 7.90	1.8745	8 8 57.5	14.324
10	13 15 0.38	1.8749	8 23 15.5	14.276
11	13 16 52.89	1.8754	8 37 30.6	14.228
12	13 18 45.43	1.8759	8 51 42.9	14.180
13	13 20 38.00	1.8764	9 5 52.2	14.129
14	13 22 30.60	1.8770	9 19 58.4	14.078
15	13 24 23.24	1.8777	9 34 1.6	14.027
16	13 26 15.92	1.8785	9 48 1.7	13.976
17	13 28 8.66	1.8794	10 1 58.7	13.923
18	13 30 1.45	1.8803	10 15 52.5	13.869
19	13 31 54.30	1.8813	10 29 43.0	13.815
20	13 33 47.21	1.8823	10 43 30.3	13.761
21	13 35 40.18	1.8834	10 57 14.3	13.705
22	13 37 33.22	1.8847	11 10 54.9	13.648
23	13 39 26.34	1.8860	11 24 32.0	13.590
24	13 41 19.54	1.8873	S. 11 38 5.7	13.532

SUNDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 41 19.54	1.8873	S. 11 38 5.7	13.532
1	13 43 12.82	1.8887	11 51 35.9	13.474
2	13 45 6.19	1.8902	12 5 2.6	13.415
3	13 46 59.65	1.8917	12 18 25.7	13.355
4	13 48 53.20	1.8934	12 31 45.2	13.294
5	13 50 46.85	1.8951	12 45 1.0	13.232
6	13 52 40.61	1.8968	12 58 13.0	13.169
7	13 54 34.47	1.8986	13 11 21.3	13.106
8	13 56 28.44	1.9005	13 24 25.8	13.043
9	13 58 22.53	1.9024	13 37 26.5	12.979
10	14 0 16.73	1.9043	13 50 23.3	12.914
11	14 2 11.05	1.9064	14 3 16.2	12.848
12	14 4 5.50	1.9086	14 16 5.1	12.781
13	14 6 0.08	1.9107	14 28 49.9	12.714
14	14 7 54.79	1.9129	14 41 30.7	12.646
15	14 9 49.63	1.9152	14 54 7.4	12.577
16	14 11 44.61	1.9175	15 6 40.0	12.507
17	14 13 39.73	1.9199	15 19 8.3	12.437
18	14 15 35.00	1.9224	15 31 32.4	12.366
19	14 17 30.42	1.9249	15 43 52.2	12.294
20	14 19 25.99	1.9274	15 56 7.7	12.222
21	14 21 21.71	1.9300	16 8 18.8	12.148
22	14 23 17.59	1.9327	16 20 25.5	12.074
23	14 25 13.63	1.9354	S. 16 32 27.7	11.999

MONDAY, JANUARY 1, 1894.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 27 9.84	1.9381	S. 16 44 25.4	11.923

PHASES OF THE MOON.

		d	h	m
● New Moon . .	Dec.	7	19	40.0
☽ First Quarter . . .		15	22	21.4
○ Full Moon		22	16	36.6
☾ Last Quarter		29	11	17.7

		d	h
☾ Apogee	Dec.	8	23.4
☾ Perigee		22	15.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Pollux	W.	61° 20′ 10″	2682	62° 57′ 14″	2695	64° 34′ 1″	2708	66° 10′ 30″	2721
	Regulus	W.	24 50 45	2722	26 26 56	2732	28 2 54	2741	29 38 39	2750
	Saturn	E.	28 43 6	2732	27 7 9	2749	25 31 34	2765	23 56 20	2782
	Spica	E.	29 30 33	2687	27 53 36	2702	26 16 59	2716	24 40 41	2732
	Mars	E.	46 16 47	2917	44 44 50	2931	43 13 11	2946	41 41 51	2961
	Sun	E.	76 25 57	3046	74 56 41	3060	73 27 43	3075	71 59 3	3090
2	Pollux	W.	74 8 45	2782	75 43 36	2793	77 18 13	2804	78 52 36	2815
	Regulus	W.	37 34 11	2801	39 8 38	2811	40 42 52	2821	42 16 53	2831
	Mars	E.	34 9 34	3029	32 39 57	3043	31 10 37	3056	29 41 33	3069
	Sun	E.	64 40 1	3158	63 13 1	3170	61 46 16	3183	60 19 47	3195
3	Pollux	W.	86 41 5	2865	88 14 9	2874	89 47 1	2883	91 19 42	2892
	Regulus	W.	50 3 53	2876	51 36 42	2885	53 9 20	2894	54 41 47	2902
	Sun	E.	53 10 53	3253	51 45 47	3264	50 20 53	3275	48 56 12	3285
4	Pollux	W.	99 0 25	2931	100 32 4	2939	102 3 33	2946	103 34 54	2953
	Regulus	W.	62 21 30	2940	63 52 58	2946	65 24 18	2954	66 55 29	2960
	Sun	E.	41 55 45	3335	40 32 14	3345	39 8 54	3354	37 45 45	3363
5	Regulus	W.	74 29 26	2990	75 59 51	2995	77 30 10	3001	79 0 22	3006
	Spica	W.	20 26 48	2996	21 57 6	3000	23 27 19	3004	24 57 27	3008
	Sun	E.	30 52 43	3412	29 30 40	3423	28 8 50	3434	26 47 12	3446
9	Sun	W.	13 39 58	3675	14 57 12	3647	16 14 56	3622	17 33 7	3601
	Fomalhaut	E.	62 3 23	3348	60 40 7	3356	59 17 0	3365	57 54 3	3374
	α Pegasi	E.	83 38 10	3396	82 15 49	3399	80 53 31	3401	79 31 16	3405
10	Sun	W.	24 8 37	3536	25 28 21	3529	26 48 13	3522	28 8 13	3515
	Fomalhaut	E.	51 2 18	3434	49 40 40	3448	48 19 18	3465	46 58 15	3482
	α Pegasi	E.	72 41 0	3424	71 19 11	3429	69 57 27	3434	68 35 49	3439
11	Sun	W.	34 49 57	3485	36 10 38	3480	37 31 25	3474	38 52 18	3468
	Fomalhaut	E.	40 18 38	3604	39 0 8	3637	37 42 14	3675	36 25 0	3716
	α Pegasi	E.	61 49 25	3476	60 28 34	3485	59 7 53	3495	57 47 23	3506
	α Arietis	E.	102 35 37	3105	101 7 34	3102	99 39 27	3098	98 11 15	3093
12	Sun	W.	45 38 27	3436	47 0 3	3429	48 21 47	3422	49 43 39	3414
	α Pegasi	E.	51 8 22	3579	49 49 25	3598	48 30 49	3621	47 12 37	3645
	α Arietis	E.	90 48 52	3069	89 20 5	3065	87 51 12	3058	86 22 11	3052
	Jupiter	E.	106 59 43	2997	105 29 27	2992	103 59 4	2985	102 28 33	2980
13	Sun	W.	56 35 17	3372	57 58 6	3362	59 21 6	3351	60 44 18	3342
	α Arietis	E.	78 55 9	3018	77 25 18	3010	75 55 18	3002	74 25 8	2993
	Jupiter	E.	94 53 57	2944	93 22 34	2935	91 51 0	2927	90 19 16	2919
	Aldebaran	E.	109 28 22	3036	107 58 54	3026	106 29 14	3017	104 59 22	3007
14	Sun	W.	67 43 21	3285	69 7 50	3272	70 32 34	3259	71 57 33	3247
	α Aquilæ	W.	43 52 43	5160	44 47 35	5025	45 44 11	4899	46 42 27	4783
	α Arietis	E.	66 51 34	2948	65 20 16	2939	63 48 46	2928	62 17 3	2918
	Jupiter	E.	82 37 39	2869	81 4 41	2858	79 31 28	2847	77 58 1	2835
	Aldebaran	E.	97 26 51	2954	95 55 40	2942	94 24 14	2930	92 52 33	2918

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Pollux	W.	67° 46′ 42″	2734	69° 22′ 37″	2746	70° 58′ 16″	2759	72° 33′ 38″	2770
	Regulus	W.	31 14 12	2760	32 49 32	2771	34 24 38	2781	35 59 31	2791
	SATURN	E.	22 21 28	2798	20 46 58	2817	19 12 52	2836	17 39 10	2856
	Spica	E.	23 4 43	2746	21 29 4	2760	19 53 44	2774	18 18 42	2788
	MARS	E.	40 10 49	2974	38 40 4	2989	37 9 37	3002	35 39 27	3016
	SUN	E.	70 30 41	3104	69 2 36	3118	67 34 48	3131	66 7 16	3145
2	Pollux	W.	80 26 44	2825	82 0 39	2836	83 34 20	2845	85 7 49	2855
	Regulus	W.	43 50 41	2840	45 24 17	2849	46 57 41	2859	48 30 53	2868
	MARS	E.	28 12 46	3082	26 44 14	3096	25 15 59	3109	23 48 0	3121
	SUN	E.	58 53 32	3206	57 27 32	3219	56 1 45	3231	54 36 12	3242
3	Pollux	W.	92 52 11	2900	94 24 30	2909	95 56 38	2916	97 28 36	2924
	Regulus	W.	56 14 3	2910	57 46 9	2917	59 18 6	2925	60 49 53	2933
	SUN	E.	47 31 43	3295	46 7 26	3306	44 43 21	3315	43 19 27	3325
4	Pollux	W.	105 6 6	2959	106 37 10	2965	108 8 6	2972	109 38 54	2977
	Regulus	W.	68 26 32	2966	69 57 27	2973	71 28 14	2978	72 58 54	2985
	SUN	E.	36 22 46	3372	34 59 58	3383	33 37 22	3393	32 14 57	3402
5	Regulus	W.	80 30 28	3011	82 0 27	3015	83 30 21	3020	85 0 9	3024
	Spica	W.	26 27 30	3019	27 57 28	3015	29 27 22	3019	30 57 11	3023
	SUN	E.	25 25 47	3458	24 4 36	3471	22 43 39	3486	21 22 59	3502
9	SUN	W.	18 51 40	3584	20 10 32	3568	21 29 41	3556	22 49 3	3545
	Fomalhaut	E.	56 31 17	3385	55 8 43	3395	53 46 21	3407	52 24 12	3420
	α Pegasi	E.	78 9 5	3408	76 46 58	3411	75 24 54	3415	74 2 55	3419
10	SUN	W.	29 28 20	3509	30 48 34	3503	32 8 55	3497	33 29 23	3491
	Fomalhaut	E.	45 37 31	3503	44 17 10	3524	42 57 12	3547	41 37 40	3575
	α Pegasi	E.	67 14 17	3446	65 52 52	3453	64 31 35	3460	63 10 26	3467
11	SUN	W.	40 13 18	3463	41 34 24	3455	42 55 38	3449	44 16 59	3443
	Fomalhaut	E.	35 8 30	3764	33 52 50	3819	32 38 7	3880	31 24 27	3949
	α Pegasi	E.	56 27 6	3518	55 7 2	3531	53 47 12	3545	52 27 38	3562
	α Arietis	E.	96 42 57	3089	95 14 34	3085	93 46 6	3080	92 17 32	3075
12	SUN	W.	51 5 40	3406	52 27 50	3398	53 50 9	3389	55 12 38	3380
	α Pegasi	E.	45 54 51	3672	44 37 34	3701	43 20 48	3734	42 4 37	3772
	α Arietis	E.	84 53 3	3046	83 23 47	3039	81 54 23	3032	80 24 50	3026
	JUPITER	E.	100 57 55	2973	99 27 9	2966	97 56 14	2959	96 25 10	2952
13	SUN	W.	62 7 41	3331	63 31 17	3320	64 55 5	3309	66 19 6	3297
	α Arietis	E.	72 54 47	2985	71 24 16	2976	69 53 33	2967	68 22 39	2958
	JUPITER	E.	88 47 21	2909	87 15 14	2900	85 42 55	2891	84 10 24	2880
	Aldebaran	E.	103 29 18	2997	101 59 1	2986	100 28 31	2976	98 57 48	2965
14	SUN	W.	73 22 47	3233	74 48 17	3219	76 14 4	3204	77 40 8	3190
	α Aquilæ	W.	47 42 17	4676	48 43 37	4574	49 46 24	4481	50 50 33	4394
	α Arietis	E.	60 45 7	2907	59 12 57	2897	57 40 34	2886	56 7 57	2875
	JUPITER	E.	76 24 19	2823	74 50 21	2811	73 16 7	2798	71 41 37	2785
	Aldebaran	E.	91 20 37	2906	89 48 26	2893	88 15 58	2880	86 43 13	2867

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	Sun	W.	79° 6′ 29″	3175	80° 33′ 8″	3159	82° 0′ 6″	3143	83° 27′ 23″	3128
	α Aquilæ	W.	51 56 0	4311	53 2 42	4235	54 10 35	4162	55 19 37	4095
	Venus	W.	32 5 21	3149	33 32 31	3132	35 0 2	3115	36 27 53	3098
	α Arietis	E.	54 35 6	2864	53 2 1	2859	51 28 41	2849	49 55 7	2830
	Jupiter	E.	70 6 50	2772	68 31 46	2758	66 56 23	2744	65 20 42	2730
	Aldebaran	E.	85 10 12	2853	83 36 53	2840	82 3 17	2825	80 29 22	2811
16	Sun	W.	90 48 48	3043	92 18 8	3024	93 47 51	3006	95 17 56	2987
	α Aquilæ	W.	61 20 19	3803	62 35 18	3754	63 51 8	3706	65 7 49	3661
	Venus	W.	43 52 30	3009	45 22 32	2989	46 52 58	2970	48 23 48	2951
	α Arietis	E.	42 3 42	2777	40 28 44	2768	38 53 34	2759	37 18 12	2752
	Jupiter	E.	57 17 25	2655	55 39 44	2639	54 1 42	2623	52 23 18	2606
	Aldebaran	E.	72 35 4	2737	70 59 13	2722	69 23 2	2707	67 46 31	2691
17	Sun	W.	102 54 16	2892	104 26 45	2873	105 59 39	2853	107 32 58	2833
	α Aquilæ	W.	71 42 44	3462	73 3 51	3427	74 25 37	3393	75 48 1	3361
	Venus	W.	56 4 7	2852	57 37 27	2832	59 11 13	2811	60 45 26	2791
	Fomalhaut	W.	40 55 48	3030	42 25 23	2981	43 55 59	2935	45 27 33	2891
	Jupiter	E.	44 5 42	2524	42 25 2	2507	40 43 59	2491	39 2 33	2475
	Aldebaran	E.	59 38 40	2612	58 0 2	2598	56 21 4	2583	54 41 45	2567
18	α Aquilæ	W.	82 48 44	3221	84 14 28	3198	85 40 40	3175	87 7 19	3153
	Venus	W.	68 43 17	2688	70 20 13	2667	71 57 37	2647	73 35 28	2626
	Fomalhaut	W.	53 18 25	2706	54 54 57	2674	56 32 12	2643	58 10 8	2613
	Aldebaran	E.	46 20 13	2500	44 39 0	2489	42 57 31	2479	41 15 48	2470
	Pollux	E.	89 24 56	2384	87 40 59	2366	85 56 35	2347	84 11 44	2329
19	Venus	W.	81 51 38	2527	83 32 14	2508	85 13 16	2489	86 54 45	2471
	Fomalhaut	W.	66 29 30	2481	68 11 10	2458	69 53 23	2435	71 36 8	2413
	α Pegasi	W.	46 48 53	2848	48 22 18	2798	49 56 49	2750	51 32 22	2707
	Pollux	E.	75 20 48	2238	73 33 17	2220	71 45 20	2204	69 56 58	2186
20	Fomalhaut	W.	80 17 15	2318	82 2 48	2302	83 48 45	2286	85 35 5	2272
	α Pegasi	W.	59 43 35	2527	61 24 10	2498	63 5 26	2471	64 47 20	2446
	Pollux	E.	60 48 55	2108	58 58 8	2094	57 7 0	2080	55 15 30	2067
	Regulus	E.	97 30 15	2113	95 39 36	2098	93 48 34	2085	91 57 11	2072
21	α Pegasi	W.	73 24 58	2345	75 9 52	2330	76 55 8	2315	78 40 45	2303
	α Arietis	W.	29 58 42	2183	31 47 35	2157	33 37 8	2133	35 27 17	2111
	Pollux	E.	45 53 13	2010	43 59 55	2001	42 6 23	1993	40 12 37	1985
	Regulus	E.	82 35 27	2014	80 42 15	2005	78 48 48	1996	76 55 7	1988
22	α Pegasi	W.	87 32 38	2264	89 19 31	2260	91 6 30	2258	92 53 32	2257
	α Arietis	W.	44 44 52	2041	46 37 22	2032	48 30 6	2025	50 23 1	2019
	Jupiter	W.	29 5 24	1970	30 59 45	1963	32 54 17	1958	34 48 58	1953
	Regulus	E.	67 24 1	1960	65 29 24	1957	63 34 42	1955	61 39 57	1954
23	α Arietis	W.	59 49 16	2009	61 42 37	2009	63 35 57	2012	65 29 13	2015
	Jupiter	W.	44 23 35	1948	46 18 32	1950	48 13 25	1953	50 8 13	1957
	Aldebaran	W.	29 53 34	2182	31 42 28	2162	33 31 53	2147	35 21 41	2134
	Regulus	E.	52 6 9	1961	50 11 33	1965	48 17 3	1970	46 22 41	1975
	Spica	E.	106 5 56	1951	104 11 4	1954	102 16 17	1958	100 21 37	1963

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	Sun	W.	84° 54′ 59″	3111	86° 22′ 55″	3094	87° 51′ 12″	3078	89° 19′ 49″	3060
	α Aquilæ	W.	56 29 44	4030	57 40 54	3968	58 53 5	3911	60 6 14	3856
	Venus	W.	37 56 5	3081	39 24 38	3063	40 53 33	3045	42 22 50	3026
	α Arietis	E.	48 21 18	2819	46 47 15	2808	45 12 58	2798	43 38 27	2787
	Jupiter	E.	63 44 42	2716	62 8 23	2701	60 31 44	2686	58 54 45	2670
	Aldebaran	E.	78 55 9	2797	77 20 37	2782	75 45 46	2767	74 10 35	2752
16	Sun	W.	96 48 25	2969	98 19 17	2950	99 50 32	2931	101 22 12	2912
	α Aquilæ	W.	66 25 18	3617	67 43 34	3576	69 2 34	3536	70 22 18	3496
	Venus	W.	49 55 2	2931	51 26 41	2912	52 58 44	2892	54 31 13	2873
	α Arietis	E.	35 42 41	2745	34 7 1	2740	32 31 14	2737	30 55 23	2736
	Jupiter	E.	50 44 32	2591	49 5 24	2574	47 25 53	2557	45 45 59	2540
	Aldebaran	E.	66 9 39	2675	64 32 26	2660	62 54 52	2644	61 16 57	2628
17	Sun	W.	109 6 43	2813	110 40 54	2794	112 15 30	2773	113 50 33	2754
	α Aquilæ	W.	77 11 2	3331	78 34 38	3301	79 58 48	3274	81 23 30	3247
	Venus	W.	62 20 6	2770	63 55 13	2750	65 30 47	2729	67 6 48	2708
	Fomalhaut	W.	47 0 3	2851	48 33 25	2811	50 7 38	2775	51 42 38	2740
	Jupiter	E.	37 20 44	2458	35 38 32	2443	33 55 58	2426	32 13 1	2411
	Aldebaran	E.	53 2 5	2553	51 22 6	2539	49 41 47	2525	48 1 9	2512
18	α Aquilæ	W.	88 34 24	3134	90 1 52	3115	91 29 43	3099	92 57 54	3083
	Venus	W.	75 13 47	2606	76 52 34	2586	78 31 48	2566	80 11 29	2546
	Fomalhaut	W.	59 48 45	2585	61 28 1	2558	63 7 54	2531	64 48 24	2505
	Aldebaran	E.	39 33 53	2462	37 51 47	2457	36 9 33	2453	34 27 13	2452
	Pollux	E.	82 26 27	2310	80 40 42	2292	78 54 31	2274	77 7 53	2256
19	Venus	W.	88 36 39	2453	90 18 59	2436	92 1 43	2418	93 44 52	2401
	Fomalhaut	W.	73 19 24	2392	75 3 10	2372	76 47 25	2353	78 32 7	2335
	α Pegasi	W.	53 8 53	2666	54 46 19	2627	56 24 37	2592	58 3 43	2559
	Pollux	E.	68 8 10	2170	66 18 57	2154	64 29 20	2138	62 39 19	2123
20	Fomalhaut	W.	87 21 45	2259	89 8 45	2246	90 56 4	2235	92 43 39	2225
	α Pegasi	W.	66 29 49	2422	68 12 52	2401	69 56 26	2380	71 40 29	2362
	Pollux	E.	53 23 40	2054	51 31 30	2042	49 39 2	2031	47 46 16	2020
	Regulus	E.	90 5 28	2059	88 13 25	2046	86 21 3	2035	84 28 23	2025
21	α Pegasi	W.	80 26 40	2992	82 12 51	2983	83 59 16	2975	85 45 52	2968
	α Arietis	W.	37 17 59	2093	39 9 9	2077	41 0 43	2064	42 52 38	2052
	Pollux	E.	38 18 39	1978	36 24 30	1972	34 30 12	1967	32 35 46	1963
	Regulus	E.	75 1 14	1981	73 7 10	1974	71 12 55	1969	69 18 32	1964
22	α Pegasi	W.	94 40 35	2958	96 27 37	2960	98 14 35	2964	100 1 28	2970
	α Arietis	W.	52 16 6	2015	54 9 17	2011	56 2 34	2009	57 55 54	2008
	Jupiter	W.	36 43 46	1950	38 38 40	1948	40 33 37	1946	42 28 36	1946
	Regulus	E.	59 45 10	1953	57 50 22	1954	55 55 35	1955	54 0 50	1958
23	α Arietis	W.	67 22 24	2019	69 15 28	2025	71 8 23	2031	73 1 9	2038
	Jupiter	W.	52 2 55	1962	53 57 29	1968	55 51 53	1975	57 46 7	1983
	Aldebaran	W.	37 11 48	2126	39 2 8	2120	40 52 37	2116	42 43 12	2115
	Regulus	E.	44 28 28	1962	42 34 26	1966	40 40 36	1969	38 47 0	2008
	Spica	E.	98 27 4	1969	96 32 41	1975	94 38 28	1983	92 44 27	1991

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
24	α Arietis	W.	74 53 44	2046	76 46 6	2055	78 38 15	2064	80 30 9	2075
	Jupiter	W.	59 40 8	1991	61 33 56	2000	63 27 30	2010	65 20 48	2021
	Aldebaran	W.	44 33 48	2116	46 24 23	2118	48 14 54	2122	50 5 19	2128
	Spica	E.	90 50 38	2000	88 57 3	2010	87 3 44	2020	85 10 41	2031
	Saturn	E.	91 51 45	2023	89 58 47	2033	88 6 5	2044	86 13 39	2055
25	α Arietis	W.	89 45 12	2138	91 35 13	2153	93 24 51	2169	95 14 6	2184
	Jupiter	W.	74 42 49	2085	76 34 12	2098	78 25 14	2113	80 15 53	2129
	Aldebaran	W.	59 14 41	2172	61 3 50	2184	62 52 41	2197	64 41 13	2210
	Spica	E.	75 50 2	2096	73 58 56	2110	72 8 12	2125	70 17 51	2140
	Saturn	E.	76 56 4	2120	75 5 35	2134	73 15 28	2149	71 25 44	2165
	Mars	E.	108 41 12	2306	106 55 21	2321	105 9 52	2337	103 24 46	2353
26	Jupiter	W.	89 23 0	2212	91 11 9	2231	92 58 51	2248	94 46 7	2267
	Aldebaran	W.	73 38 36	2286	75 24 56	2303	77 10 51	2320	78 56 21	2338
	Pollux	W.	29 38 37	2230	31 26 20	2247	33 13 38	2264	35 0 30	2281
	Spica	E.	61 12 11	2225	59 24 20	2243	57 36 56	2260	55 49 58	2279
	Saturn	E.	62 23 12	2250	60 35 59	2268	58 49 12	2287	57 2 53	2305
	Mars	E.	94 45 20	2441	93 2 43	2459	91 20 32	2478	89 38 48	2497
	Antares	E.	107 5 32	2223	105 17 38	2241	103 30 11	2259	101 43 11	2277
27	Aldebaran	W.	87 37 22	2429	89 20 15	2448	91 2 41	2467	92 44 40	2487
	Pollux	W.	43 48 16	2374	45 32 28	2392	47 16 14	2412	48 59 32	2430
	Spica	E.	47 1 56	2373	45 17 42	2391	43 33 55	2411	41 50 36	2431
	Saturn	E.	48 18 9	2401	46 34 36	2422	44 51 32	2441	43 8 55	2461
	Mars	E.	81 16 56	2596	79 37 56	2616	77 59 23	2637	76 21 18	2657
	Antares	E.	92 54 54	2370	91 10 36	2389	89 26 46	2408	87 43 23	2427
	Sun	E.	120 21 39	2723	118 45 30	2743	117 9 47	2763	115 34 30	2783
28	Pollux	W.	57 29 25	2524	59 10 5	2543	60 50 19	2561	62 30 8	2579
	Regulus	W.	20 59 39	2572	22 39 13	2585	24 18 29	2598	25 57 27	2612
	Spica	E.	33 20 51	2526	31 40 14	2545	30 0 4	2564	28 20 20	2583
	Saturn	E.	34 42 57	2562	33 3 10	2583	31 23 51	2604	29 45 1	2625
	Mars	E.	68 17 38	2757	66 42 14	2777	65 7 16	2797	63 32 44	2817
	Antares	E.	79 13 11	2522	77 32 28	2540	75 52 11	2559	74 12 19	2577
	Sun	E.	107 44 40	2883	106 12 0	2903	104 39 45	2923	103 7 55	2942
29	Pollux	W.	70 43 5	2666	72 20 30	2684	73 57 32	2700	75 34 12	2716
	Regulus	W.	34 7 25	2686	35 44 24	2701	37 21 2	2716	38 57 20	2731
	Mars	E.	55 46 22	2912	54 14 18	2931	52 42 38	2948	51 11 20	2966
	Antares	E.	65 59 8	2665	64 21 41	2681	62 44 36	2698	61 7 54	2714
	Sun	E.	95 34 51	3037	94 5 24	3056	92 36 20	3073	91 7 38	3091
30	Pollux	W.	83 32 18	2792	85 6 56	2807	86 41 15	2821	88 15 16	2834
	Regulus	W.	46 53 59	2803	48 28 23	2817	50 2 29	2830	51 36 18	2844
	Mars	E.	43 4(22	3052	42 11 13	3069	40 42 25	3084	39 13 56	3101
	Antares	E.	53 9 37	2791	51 34 57	2805	50 0 36	2819	48 26 33	2833
	Sun	E.	83 49 22	3175	82 22 43	3190	80 56 22	3205	79 30 19	3220
31	Regulus	W.	59 21 16	2903	60 53 31	2915	62 25 31	2925	63 57 18	2935
	Antares	E.	40 40 30	2894	39 8 4	2906	37 35 53	2916	36 3 55	2927
	Sun	E.	72 24 20	3289	70 59 56	3301	69 35 46	3314	68 11 51	3325

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
24	α Arietis W.	82° 21′ 46″	2086	84° 13′ 6″	2098	86° 4′ 8″	2111	87° 54′ 51″	2125
	Jupiter W.	67 13 50	2032	69 6 34	2044	70 58 59	2057	72 51 4	2070
	Aldebaran W.	51 55 35	2135	53 45 41	2143	55 35 35	2152	57 25 15	2161
	Spica E.	83 17 55	2043	81 25 28	2056	79 33 19	2068	77 41 30	2081
	Saturn E.	84 21 30	2066	82 29 39	2079	80 38 7	2092	78 46 55	2105
25	α Arietis W.	97 2 58	2200	98 51 25	2217	100 39 27	2235	102 27 3	2252
	Jupiter W.	82 6 8	2145	83 55 59	2161	85 45 25	2178	87 34 25	2195
	Aldebaran W.	66 29 25	2225	68 17 16	2239	70 4 46	2254	71 51 53	2270
	Spica E.	68 27 53	2157	66 38 20	2172	64 49 11	2190	63 0 28	2207
	Saturn E.	69 36 24	2181	67 47 28	2198	65 58 57	2215	64 10 52	2232
	Mars E.	101 40 4	2370	99 55 46	2387	98 11 52	2404	96 28 23	2422
26	Jupiter W.	96 32 55	2285	98 19 16	2304	100 5 10	2323	101 50 36	2342
	Aldebaran W.	80 41 25	2355	82 26 4	2374	84 10 16	2392	85 54 2	2410
	Pollux W.	36 46 57	2300	38 32 57	2318	40 18 30	2337	42 3 36	2355
	Spica E.	54 3 27	2297	52 17 23	2316	50 31 47	2335	48 46 38	2353
	Saturn E.	55 17 1	2324	53 31 36	2343	51 46 39	2362	50 2 10	2382
	Mars E.	87 57 31	2517	86 16 41	2537	84 36 19	2556	82 56 24	2576
	Antares E.	99 56 37	2295	98 10 30	2314	96 24 51	2333	94 39 39	2351
27	Aldebaran W.	94 26 12	2506	96 7 17	2525	97 47 55	2545	99 28 6	2564
	Pollux W.	50 42 24	2449	52 24 49	2468	54 6 47	2487	55 48 19	2505
	Spica E.	40 7 45	2450	38 25 21	2469	36 43 24	2488	35 1 54	2507
	Saturn E.	41 26 47	2481	39 45 7	2502	38 3 56	2521	36 23 12	2542
	Mars E.	74 43 40	2677	73 6 29	2697	71 29 45	2717	69 53 28	2738
	Antares E.	86 0 27	2446	84 17 58	2465	82 35 56	2484	80 54 20	2503
	Sun E.	113 59 40	2803	112 25, 16	2823	110 51 18	2843	109 17 46	2863
28	Pollux W.	64 9 32	2597	65 48 31	2615	67 27 6	2632	69 5 17	2649
	Regulus W.	27 36 6	2626	29 14 26	2640	30 52 26	2655	32 30 6	2671
	Spica E.	26 41 2	2602	25 2 10	2621	23 23 44	2640	21 45 43	2658
	Saturn E.	28 6 40	2646	26 28 48	2668	24 51 25	2690	23 14 32	2712
	Mars E.	61 58 38	2836	60 24 57	2855	58 51 41	2874	57 18 49	2894
	Antares E.	72 32 52	2595	70 53 50	2612	69 15 12	2630	67 36 58	2648
	Sun E.	101 36 30	2962	100 5 29	2981	98 34 53	3000	97 4 40	3019
29	Pollux W.	77 10 31	2732	78 46 28	2747	80 22 5	2763	81 57 21	2778
	Regulus W.	40 33 19	2746	42 8 58	2761	43 44 17	2775	45 19 17	2789
	Mars E.	49 40 25	2984	48 9 52	3001	46 39 41	3018	45 9 51	3035
	Antares E.	59 31 33	2731	57 55 34	2746	56 19 55	2761	54 44 36	2776
	Sun E.	89 39 17	3109	88 11 18	3125	86 43 39	3143	85 16 21	3158
30	Pollux W.	89 49 0	2847	91 22 27	2860	92 55 37	2873	94 28 31	2884
	Regulus W.	53 9 49	2856	54 43 4	2869	56 16 3	2880	57 48 47	2892
	Mars E.	37 45 47	3116	36 17 57	3132	34 50 26	3147	33 23 13	3163
	Antares E.	46 52 48	2845	45 19 19	2859	43 46 7	2871	42 13 11	2883
	Sun E.	78 4 34	3235	76 39 6	3249	75 13 55	3263	73 49 0	3276
31	Regulus W.	65 28 52	2946	67 0 13	2954	68 31 23	2964	70 2 21	2973
	Antares E.	34 32 11	2938	33 0 40	2947	31 29 21	2957	29 58 14	2965
	Sun E.	66 48 9	3338	65 24 41	3348	64 1 25	3359	62 38 22	3369

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	17 11 17.82	+10.854	−21 10 4.8	−34.54	22 26.3	1	20 19 17.19	+17.018	−21 27 23.7	+46.53	23 34.4
2	17 15 45.26	11.424	21 23 50.4	34.20	22 27.0	2	20 26 6.13	17.060	21 8 4.3	50.09	23 37.3
3	17 20 25.71	11.938	21 37 23.5	33.51	22 28.0	3	20 32 56.03	17.099	20 47 19.3	53.67	23 40.2
4	17 25 17.90	12.403	21 50 36.5	32.52	22 29.1	4	20 39 46.84	17.135	20 25 8.1	57.27	23 43.2
5	17 30 20.71	12.825	22 3 22.3	31.25	22 30.4	5	20 46 38.48	17.168	20 1 30.4	60.88	23 46.1
6	17 35 33.17	+13.208	−22 15 34.8	−29.75	22 31.8	6	20 53 30.90	+17.199	−19 36 25.9	+64.50	23 49.1
7	17 40 54.39	13.556	22 27 8.7	28.04	22 33.3	7	21 0 24.03	17.228	19 9 54.2	68.14	23 52.0
8	17 46 23.59	13.873	22 37 59.2	26.14	22 34.9	8	21 7 17.84	17.255	18 41 55.3	71.78	23 55.0
9	17 52 0.07	14.163	22 48 1.9	24.04	22 36.7	9	21 14 12.28	17.281	18 12 29.0	75.43	23 58.0
10	17 57 43.21	14.429	22 57 13.0	21.82	22 38.6	10	21 21 7.31	17.305	17 41 34.8	79.08	
11	18 3 32.47	+14.672	−23 5 29.2	−19.48	22 40.5	11	21 28 2.90	+17.327	−17 9 13.0	+82.73	0 1.0
12	18 9 27.33	14.896	23 12 47.2	17.00	22 42.6	12	21 34 59.00	17.348	16 35 24.0	86.37	0 4.0
13	18 15 27.33	15.101	23 19 4.3	14.41	22 44.7	13	21 41 55.56	17.366	16 0 7.6	90.00	0 7.0
14	18 21 32.06	15.290	23 24 18.0	11.72	22 46.9	14	21 48 52.53	17.382	15 23 24.2	93.61	0 10.0
15	18 27 41.13	15.465	23 28 26.1	8.94	22 49.2	15	21 55 49.87	17.396	14 45 14.7	97.19	0 13.0
16	18 33 54.24	+15.626	−23 31 26.6	− 6.08	22 51.6	16	22 2 47.51	+17.407	−14 5 39.5	+100.74	0 16.0
17	18 40 11.05	15.774	23 33 17.5	3.15	22 54.0	17	22 9 45.37	17.414	13 24 39.8	104.24	0 19.1
18	18 46 31.26	15.910	23 33 57.2	− 0.15	22 56.4	18	22 16 43.36	17.417	12 42 16.7	107.67	0 22.1
19	18 52 54.63	16.036	23 33 24.2	+ 2.91	22 58.9	19	22 23 41.34	17.414	11 58 32.0	111.04	0 25.1
20	18 59 20.93	16.153	23 31 37.1	6.02	23 1.4	20	22 30 39.15	17.403	11 13 27.8	114.30	0 28.1
21	19 5 49.91	+16.261	−23 28 34.6	+ 9.19	23 4.0	21	22 37 36.62	+17.384	−10 27 6.8	+117.44	0 31.2
22	19 12 21.38	16.360	23 24 15.4	12.41	23 6.7	22	22 44 33.50	17.354	9 39 32.0	120.45	0 34.2
23	19 18 55.14	16.452	23 18 38.5	15.67	23 9.3	23	22 51 29.51	17.311	8 50 46.6	123.29	0 37.2
24	19 25 31.02	16.537	23 11 42.8	18.97	23 12.0	24	22 58 24.30	17.251	8 0 55.5	125.92	0 40.1
25	19 32 8.85	16.615	23 3 27.5	22.31	23 14.7	25	23 5 17.41	17.171	7 10 4.2	128.31	0 43.1
26	19 38 48.49	+16.688	−22 53 51.7	+25.68	23 17.5	26	23 12 8.34	+17.069	− 6 18 19.0	+130.42	0 46.0
27	19 45 29.80	16.755	22 42 54.6	29.09	23 20.2	27	23 18 56.50	16.939	5 25 46.9	132.19	0 48.9
28	19 52 12.65	16.816	22 30 35.3	32.53	23 23.0	28	23 25 41.13	16.775	4 32 37.1	133.57	0 51.7
29	19 58 56.92	16.872	22 16 53.1	35.99	23 25.9	29	23 32 21.40	16.574	3 38 59.0	134.53	0 54.4
30	20 5 42.50	16.925	22 1 47.5	39.48	23 28.7	30	23 38 56.35	16.330	2 45 3.5	135.00	0 57.1
31	20 12 29.29	+16.973	−21 45 17.9	+42.99	23 31.6	31	23 45 24.87	+16.038	− 1 51 3.6	+134.88	0 59.6
32	20 19 17.19	+17.018	−21 27 23.7	+46.53	23 34.4	32	23 51 45.72	+15.691	− 0 57 13.0	+134.21	1 2.0

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	3″.2	3″.0	2″.8	2″.6	2″.5	2″.5	2″.4
Hor. Parallax . .	8.6	7.9	7.4	7.0	6.7	6.5	6.4

Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter	2″.4	2″.4	2″.4	2″.5	2″.6
Hor. Parallax	6.3	6.3	6.4	6.5	6.8

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	23 32 21.40	+16.574	−3 38 59.0	+134.53	0 54.4	1	0 37 3.73	−6.783	+6 56 37.8	−74.99	23 50.2
2	23 38 56.35	16.330	2 45 3.5	135.00	0 57.1	2	0 34 21.87	6.683	6 26 0.9	77.86	23 43.7
3	23 45 24.87	16.038	1 51 3.6	134.88	0 59.6	3	0 31 43.97	6.454	5 54 31.3	79.39	23 37.2
4	23 51 45.72	15.691	0 57 13.0	134.21	1 2.0	4	0 29 13.03	6.104	5 22 40.5	79.62	23 31.0
5	23 57 57.56	15.295	−0 3 46.6	132.88	1 4.2	5	0 26 51.82	5.647	4 50 59.4	78.61	23 24.9
6	0 3 58.91	+14.816	+0 48 59.5	+130.85	1 6.3	6	0 24 42.69	−5.100	+4 19 56.5	−76.45	23 19.0
7	0 9 48.19	14.279	1 40 48.2	128.06	1 8.2	7	0 22 47.64	4.478	3 49 57.7	73.28	23 13.4
8	0 15 23.74	13.672	2 31 21.6	124.58	1 9.8	8	0 21 8.24	3.797	3 21 25.8	69.24	23 8.1
9	0 20 43.88	12.994	3 20 21.8	120.31	1 11.2	9	0 19 45.73	3.072	2 54 40.1	64.46	23 3.1
10	0 25 46.86	12.244	4 7 30.5	115.28	1 12.3	10	0 18 41.01	2.317	2 29 56.3	59.10	22 58.4
11	0 30 30.04	+11.429	+4 52 29.5	+109.51	1 13.1	11	0 17 54.63	−1.547	+2 7 27.0	−53.27	22 54.0
12	0 34 54.58	10.533	5 35 1.4	103.03	1 13.5	12	0 17 26.84	−0.768	1 47 22.0	47.11	22 49.9
13	0 38 56.08	9.582	6 14 49.5	95.87	1 13.6	13	0 17 17.72	+0.007	1 29 47.6	40.72	22 46.1
14	0 42 34.06	8.573	6 51 37.8	88.05	1 13.2	14	0 17 27.09	0.772	1 14 48.3	34.21	22 42.6
15	0 45 47.18	7.512	7 25 11.3	79.65	1 12.5	15	0 17 54.63	1.530	1 2 25.9	27.65	22 39.4
16	0 48 34.30	+6.408	+7 55 16.6	+70.71	1 11.3	16	0 18 39.87	+2.247	+0 52 40.8	−21.12	22 36.5
17	0 50 54.48	5.270	8 21 41.3	61.98	1 9.7	17	0 19 42.28	2.950	0 45 31.6	14.65	22 33.9
18	0 52 47.04	4.108	8 44 14.5	51.41	1 7.6	18	0 21 1.27	3.628	0 40 56.7	8.29	22 31.5
19	0 54 11.55	2.934	9 2 46.4	41.18	1 5.0	19	0 22 36.21	4.279	0 38 52.6	− 2.08	22 29.4
20	0 55 7.86	1.760	9 17 9.1	30.67	1 2.0	20	0 24 26.42	4.901	0 39 15.5	+ 3.96	22 27.5
21	0 55 36.17	+0.608	+9 27 17.1	+19.96	0 58.5	21	0 26 31.23	+5.496	+0 42 1.4	+ 9.82	22 25.9
22	0 55 37.02	−0.526	9 33 6.3	+ 9.13	0 54.6	22	0 28 50.01	6.065	0 47 5.6	15.50	22 24.4
23	0 55 11.29	1.608	9 34 35.5	− 1.69	0 50.2	23	0 31 22.15	6.609	0 54 23.6	20.97	22 23.2
24	0 54 20.32	2.629	9 31 46.1	12.30	0 45.4	24	0 34 7.03	7.127	1 3 50.6	26.24	22 22.2
25	0 53 5.81	3.568	9 24 42.8	22.83	0 40.3	25	0 37 4.06	7.622	1 15 21.7	31.31	22 21.4
26	0 51 29.84	−4.412	+9 13 33.8	−32.63	0 34.7	26	0 40 12.72	+8.096	+1 28 52.1	+36.18	22 20.8
27	0 49 34.94	5.144	8 58 31.5	42.25	0 28.9	27	0 43 32.52	8.550	1 44 17.0	40.86	22 20.4
28	0 47 23.91	5.752	8 39 51.9	50.91	0 22.6	28	0 47 3.00	8.987	2 1 32.0	45.35	22 20.1
29	0 44 59.88	6.225	8 17 55.4	58.64	0 16.5	29	0 50 43.77	9.406	2 20 32.5	49.66	22 20.0
30	0 42 26.22	6.556	7 53 5.8	65.31	0 10.0	30	0 54 34.44	9.814	2 41 14.2	53.79	22 20.0
31	0 39 46.34	−6.742	+7 25 50.0	−70.79	0 3.0 23 56.8	31	0 58 34.70	+10.207	+3 3 32.8	+57.74	22 20.2
32	0 37 3.73	−6.783	+6 56 37.8	−74.99	23 50.2	32	1 2 44.27	+10.580	+3 27 24.2	+61.62	22 20.6

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	2″.7	3″.0	3″.4	4″.0	4″.6	5″.3	Semidiameter . .	5″.6	5″.7	5″.4	5″.0	4″.6	4″.2
Hor. Parallax	7.3	8.0	9.1	10.6	12.4	13.9	Hor. Parallax . .	14.9	15.0	14.4	13.3	12.2	11.1

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	0 58 34.70	+10.207	+ 3 3 32.8	+57.74	22 20.2
2	1 2 44.27	10.589	3 27 24.2	61.52	22 20.6
3	1 7 2.91	10.962	3 52 44.4	65.14	22 21.1
4	1 11 30.40	11.328	4 19 29.4	68.60	22 21.8
5	1 16 6.59	11.688	4 47 35.7	71.89	22 22.6
6	1 20 51.37	+12.043	+ 5 16 59.0	+75.03	22 23.5
7	1 25 44.64	12.396	5 47 35.9	78.02	22 24.5
8	1 30 46.36	12.747	6 19 22.9	80.87	22 25.7
9	1 35 56.50	13.096	6 52 16.6	83.56	22 27.1
10	1 41 15.10	13.452	7 26 12.8	86.10	22 28.6
11	1 46 42.22	+13.808	+ 8 1 8.1	+88.48	22 30.3
12	1 52 17.94	14.169	8 36 58.8	90.71	22 32.1
13	1 58 2.37	14.535	9 13 41.0	92.78	22 34.0
14	2 3 55.67	14.906	9 51 11.0	94.68	22 36.1
15	2 9 58.02	15.289	10 29 24.2	96.40	22 38.4
16	2 16 9.61	+15.678	+11 8 16.6	+97.94	22 40.7
17	2 22 30.66	16.077	11 47 43.8	99.28	22 43.3
18	2 29 1.39	16.486	12 27 40.5	100.41	22 46.0
19	2 35 42.08	16.906	13 8 1.7	101.32	22 48.9
20	2 42 32.98	17.337	13 48 41.8	101.97	22 52.0
21	2 49 34.33	+17.778	+14 29 34.3	+102.36	22 55.3
22	2 56 46.39	18.228	15 10 32.9	102.47	22 58.7
23	3 4 9.36	18.687	15 51 30.2	102.25	23 2.4
24	3 11 43.42	19.153	16 32 18.0	101.68	23 6.2
25	3 19 28.72	19.625	17 12 47.8	100.74	23 10.2
26	3 27 25.31	+20.093	+17 52 50.3	+99.40	23 14.4
27	3 35 33.16	20.561	18 32 15.3	97.62	23 18.7
28	3 43 52.17	21.021	19 10 52.1	95.38	23 23.3
29	3 52 22.06	21.468	19 48 29.4	92.65	23 28.0
30	4 1 2.45	21.894	20 24 55.0	89.41	23 33.0
31	4 9 52.78	+22.295	+20 59 56.8	+85.66	23 38.0
32	4 18 52.36	+22.663	+21 33 22.5	+81.40	23 43.2

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	3″.8	3″.5	3″.2	3″.0	2″.8	2″.7	2″.6
Hor. Parallax . .	10.1	9.3	8.5	7.9	7.4	7.0	6.8

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	4 18 52.36	+22.663	+21 33 22.5	+81.40	23 43.2
2	4 28 0.30	22.991	22 4 59.8	76.63	23 48.6
3	4 37 15.54	23.271	22 34 36.8	71.38	23 54.0
4	4 46 36.90	23.499	23 2 2.5	65.69	23 59.5
5	4 56 3.03	23.668	23 27 6.9	59.61	
6	5 5 32.50	+23.777	+23 49 41.1	+53.19	0 5.1
7	5 15 3.81	23.822	24 9 37.9	46.50	0 10.7
8	5 24 35.43	23.802	24 26 51.8	39.63	0 16.3
9	5 34 5.82	23.720	24 41 19.2	32.64	0 21.9
10	5 43 33.50	23.577	24 52 58.1	25.60	0 27.4
11	5 52 57.07	+23.378	+25 1 48.4	+18.60	0 32.9
12	6 2 15.20	23.125	25 7 51.5	11.68	0 38.2
13	6 11 26.68	22.825	25 11 10.5	+ 4.93	0 43.5
14	6 20 30.44	22.482	25 11 49.7	− 1.63	0 48.6
15	6 29 25.54	22.104	25 9 54.1	7.96	0 53.6
16	6 38 11.17	+21.694	+25 5 29.9	−14.01	0 58.5
17	6 46 46.65	21.258	24 58 43.9	19.77	1 3.1
18	6 55 11.41	20.802	24 49 43.3	25.22	1 7.6
19	7 3 25.00	20.398	24 38 35.7	30.36	1 11.9
20	7 11 27.04	19.840	24 25 28.7	35.17	1 16.0
21	7 19 17.25	+19.342	+24 10 30.0	−39.67	1 19.9
22	7 26 55.41	18.837	23 53 47.2	43.84	1 23.6
23	7 34 21.38	18.396	23 35 28.2	47.70	1 27.1
24	7 41 35.05	17.813	23 15 40.3	51.24	1 30.3
25	7 48 36.37	17.297	22 54 31.0	54.48	1 33.4
26	7 55 25.28	+16.779	+22 32 7.4	−57.44	1 36.3
27	8 2 1.76	16.261	22 8 36.4	60.10	1 38.9
28	8 8 25.82	15.744	21 44 4.7	62.49	1 41.4
29	8 14 37.47	15.227	21 18 39.1	64.61	1 43.6
30	8 20 36.71	14.710	20 52 25.7	66.47	1 45.6
31	8 26 23.53	+14.192	+20 25 30.9	−68.07	1 47.4
32	8 31 57.92	+13.674	+19 58 0.6	−69.42	1 49.0

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	2″.5	2″.6	2″.7	2″.8	3″.0	3″.3
Hor. Parallax . .	6.7	6.8	7.1	7.5	8.0	8.7

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	8 26 23.53	+14.192	+20 25 30.9	−68.07	1 47.4
2	8 31 57.92	13.674	19 58 0.6	69.42	1 49.0
3	8 37 19.88	13.156	19 30 1.0	70.52	1 50.5
4	8 42 29.38	12.635	19 1 37.7	71.38	1 51.7
5	8 47 26.35	12.112	18 32 56.5	72.01	1 52.7
6	8 52 10.71	+11.584	+18 4 3.2	−72.40	1 53.5
7	8 56 42.36	11.052	17 35 3.5	72.55	1 54.0
8	9 1 1.18	10.514	17 6 2.8	72.46	1 54.3
9	9 5 6.99	9.969	16 37 7.0	72.14	1 54.5
10	9 8 59.63	9.416	16 8 21.9	71.58	1 54.4
11	9 12 38.86	+ 8.852	+15 39 53.3	−70.77	1 54.2
12	9 16 4.41	8.276	15 11 46.9	69.72	1 53.6
13	9 19 16.01	7.688	14 44 9.0	68.40	1 52.8
14	9 22 13.34	7.067	14 17 5.7	66.83	1 51.8
15	9 24 56.05	6.469	13 50 43.4	64.98	1 50.6
16	9 27 23.74	+ 5.835	+13 25 8.6	−62.86	1 49.1
17	9 29 36.01	5.184	13 0 28.3	60.45	1 47.4
18	9 31 32.43	4.515	12 36 49.4	57.74	1 45.3
19	9 33 12.57	3.827	12 14 19.1	54.73	1 43.0
20	9 34 35.96	3.120	11 53 5.0	51.40	1 40.5
21	9 35 42.16	+ 2.394	+11 33 14.6	−47.75	1 37.6
22	9 36 30.73	1.651	11 14 55.8	43.77	1 34.4
23	9 37 1.29	0.893	10 58 16.2	39.47	1 31.0
24	9 37 13.49	+ 0.122	10 43 24.0	34.84	1 27.3
25	9 37 7.08	− 0.658	10 30 26.7	29.88	1 23.2
26	9 36 41.88	− 1.442	+10 19 32.2	−24.62	1 18.8
27	9 35 57.87	2.224	10 10 47.3	19.07	1 14.2
28	9 34 55.21	2.996	10 4 18.8	13.27	1 9.2
29	9 33 34.23	3.749	10 0 12.1	7.26	1 3.9
30	9 31 55.51	4.472	9 58 31.7	− 1.08	0 58.3
31	9 29 59.91	− 5.153	+ 9 59 21.0	+ 5.90	0 52.5
32	9 27 48.59	− 5.780	+10 2 41.3	+11.50	0 46.4

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	3.″6	3.″9	4.″2	4.″6	5.″0	5.″4
Hor. Parallax . .	9.4	10.3	11.3	12.3	13.4	14.3

AUGUST.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	9 27 48.59	− 5.780	+10 2 41.3	+11.50	0 46.4
2	9 25 23.04	6.337	10 8 32.2	17.73	0 40.0
3	9 22 45.09	6.810	10 16 51.0	23.50	0 33.4
4	9 19 56.93	7.186	10 27 32.4	29.60	0 26.7
5	9 17 1.07	7.449	10 40 28.9	35.03	0 19.9
6	9 14 0.35	− 7.589	+10 55 30.3	+39.99	0 13.0
7	9 10 57.86	7.595	11 12 24.0	44.38	0 0.0 23 59.1
8	9 7 56.90	7.460	11 30 55.1	48.10	23 52.2
9	9 5 0.92	7.181	11 50 47.0	51.09	23 45.5
10	9 2 13.37	6.757	12 11 41.4	53.31	23 39.0
11	8 59 37.71	− 6.192	+12 33 19.2	+54.70	23 32.8
12	8 57 17.24	5.492	12 55 20.4	55.26	23 26.8
13	8 55 15.11	4.666	13 17 25.1	55.00	23 21.2
14	8 53 34.16	3.728	13 39 13.9	53.92	23 16.0
15	8 52 16.93	2.606	14 0 27.1	52.06	23 11.2
16	8 51 25.59	− 1.572	+14 20 46.8	+49.46	23 6.8
17	8 51 1.99	− 0.384	14 39 55.8	46.16	23 3.0
18	8 51 7.54	+ 0.853	14 57 37.5	42.21	22 59.6
19	8 51 43.22	2.128	15 13 37.0	37.65	22 56.8
20	8 52 49.75	3.490	15 27 40.1	32.52	22 54.4
21	8 54 27.41	+ 4.718	+15 39 33.9	+26.86	22 52.6
22	8 56 36.14	6.006	15 49 6.5	20.76	22 51.3
23	8 59 15.59	7.275	15 56 6.9	14.21	22 50.5
24	9 2 25.06	8.506	16 0 25.7	7.29	22 50.2
25	9 6 3.59	9.696	16 1 54.1	+ 0.04	22 50.3
26	9 10 9.96	+10.825	+16 0 25.1	− 7.49	22 50.9
27	9 14 42.67	11.888	15 55 52.8	15.22	22 51.9
28	9 19 40.00	12.876	15 48 13.3	23.06	22 53.3
29	9 25 0.07	13.781	15 37 24.4	31.00	22 55.0
30	9 30 40.80	14.597	15 23 25.5	38.90	22 57.0
31	9 36 40.00	+15.321	+15 6 18.3	−46.68	22 59.3
32	9 42 55.43	+15.949	+14 46 6.6	−54.96	23 1.9

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	5.″6	5.″5	5.″0	4.″4	3.″8	3.″3
Hor. Parallax . .	14.8	14.4	13.3	11.7	10.1	8.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	9 42 55.43	+15.949	+14 46 6.6	− 54.26	23 1.9
2	9 49 24.78	16.482	14 22 55.9	61.58	23 4.6
3	9 56 5.81	16.922	13 56 53.5	68.55	23 7.5
4	10 2 56.33	17.273	13 28 8.7	75.12	23 10.6
5	10 9 54.24	17.540	12 56 51.6	81.24	23 13.7
6	10 16 57.63	+17.730	+12 23 13.3	− 86.87	23 16.8
7	10 24 4.71	17.850	11 47 26.0	91.98	23 20.0
8	10 31 13.92	17.909	11 9 42.2	96.58	23 23.3
9	10 38 23.91	17.915	10 30 14.1	100.68	23 26.4
10	10 45 33.50	17.877	9 49 13.8	104.27	23 29.7
11	10 52 41.70	+17.801	+ 9 6 53.1	−107.38	23 32.9
12	10 59 47.72	17.696	8 23 23.4	110.03	23 36.0
13	11 6 50.92	17.567	7 38 55.1	112.26	23 39.1
14	11 13 50.80	17.420	6 53 38.0	114.10	23 42.1
15	11 20 47.00	17.261	6 7 41.2	115.58	23 45.0
16	11 27 39.27	+17.094	+ 5 21 12.8	−116.73	23 47.9
17	11 34 27.45	16.921	4 34 20.6	117.58	23 50.7
18	11 41 11.46	16.746	3 47 11.1	118.16	23 53.4
19	11 47 51.28	16.572	2 59 50.8	118.50	23 56.0
20	11 54 26.94	16.400	2 12 24.9	118.62	23 58.6
21	12 0 56.53	+16.233	+ 1 24 58.5	−118.55	
22	12 7 26.17	16.071	+ 0 37 36.1	118.29	0 1.2
23	12 13 49.99	15.915	− 0 9 38.3	117.86	0 3.6
24	12 20 10.14	15.765	0 56 41.3	117.34	0 6.0
25	12 26 26.79	15.623	1 43 29.6	116.66	0 8.3
26	12 32 40.12	+15.489	− 2 30 0.1	−115.87	0 10.6
27	12 38 50.32	15.363	3 16 10.6	114.98	0 12.9
28	12 44 57.60	15.244	4 1 58.5	113.99	0 15.1
29	12 51 2.11	15.133	4 47 21.5	112.92	0 17.2
30	12 57 4.06	15.030	5 32 17.9	111.76	0 19.3
31	13 3 3.62	+14.935	− 6 16 45.6	−110.54	0 21.3
32	13 9 0.98	+14.846	− 7 0 43.1	−109.24	0 23.3

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
	″	″	″	″	″	″
Semidiameter . . .	2.9	2.7	2.5	2.4	2.4	2.4
Hor. Parallax . . .	7.8	7.1	6.7	6.4	6.3	6.3

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 3 3.62	+14.935	− 6 16 45.6	−110.54	0 21.3
2	13 9 0.98	14.846	7 0 43.1	109.24	0 23.3
3	13 14 56.29	14.764	7 44 8.8	107.88	0 25.3
4	13 20 49.72	14.690	8 27 1.0	106.46	0 27.3
5	13 26 41.45	14.622	9 9 18.4	104.98	0 29.2
6	13 32 31.62	+14.559	− 9 50 59.8	−103.45	0 31.1
7	13 38 20.33	14.502	10 32 3.7	101.86	0 33.0
8	13 44 7.73	14.450	11 12 28.8	100.22	0 34.8
9	13 49 53.93	14.402	11 52 13.8	98.52	0 36.6
10	13 55 39.03	14.358	12 31 17.6	96.78	0 38.4
11	14 1 23.12	+14.318	−13 9 38.9	− 94.98	0 40.2
12	14 7 6.28	14.280	13 47 16.3	93.13	0 42.0
13	14 12 48.57	14.245	14 24 8.6	91.22	0 43.8
14	14 18 30.03	14.210	15 0 14.6	89.27	0 45.5
15	14 24 10.67	14.177	15 35 33.1	67.26	0 47.3
16	14 29 50.51	+14.144	−16 10 2.6	− 85.19	0 49.0
17	14 35 29.56	14.110	16 43 41.8	83.07	0 50.7
18	14 41 7.77	14.074	17 16 29.3	80.88	0 52.4
19	14 46 45.07	14.036	17 48 23.6	78.64	0 54.1
20	14 52 21.39	13.992	18 19 23.4	76.33	0 55.7
21	14 57 56.62	+13.943	−18 49 27.0	− 73.96	0 57.4
22	15 3 30.61	13.888	19 18 32.8	71.52	0 59.0
23	15 9 3.18	13.824	19 46 39.2	69.01	1 0.6
24	15 14 34.09	13.750	20 13 44.5	66.42	1 2.2
25	15 20 3.08	13.664	20 39 46.8	63.76	1 3.7
26	15 25 29.85	+13.564	−21 4 44.2	− 61.01	1 5.2
27	15 30 54.01	13.447	21 28 34.7	58.18	1 6.7
28	15 36 15.13	13.310	21 51 16.3	55.27	1 8.1
29	15 41 32.70	13.150	22 12 47.0	52.26	1 9.5
30	15 46 46.13	12.964	22 33 4.2	49.15	1 10.7
31	15 51 54.74	+12.748	−22 52 5.6	− 45.94	1 11.9
32	15 56 57.74	+12.496	−23 9 48.5	− 42.62	1 13.0

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
	″	″	″	″	″	″
Semidiameter . .	2.4	2.4	2.5	2.6	2.7	2.9
Hor. Parallax . .	6.3	6.4	6.6	6.8	7.1	7.6

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 56 57.74	+12.496	−23 9 48.5	−42.62	1 13.0
2	16 1 54.24	12.205	23 26 10.4	39.19	1 14.0
3	16 6 43.21	11.865	23 41 8.4	35.63	1 14.9
4	16 11 23.50	11.460	23 54 39.4	31.93	1 15.6
5	16 15 53.78	11.032	24 6 40.0	28.09	1 16.2
6	16 20 12.53	+10.518	−24 17 6.7	−24.11	1 16.5
7	16 24 18.07	9.930	24 25 55.8	19.96	1 16.6
8	16 28 8.50	9.256	24 33 3.1	15.62	1 16.5
9	16 31 41.70	8.492	24 38 23.9	11.06	1 16.1
10	16 34 55.32	7.625	24 41 53.2	6.33	1 15.4
11	16 37 46.79	+ 6.644	−24 43 25.6	− 1.34	1 14.3
12	16 40 13.29	5.542	24 42 55.1	+ 3.93	1 12.8
13	16 42 11.81	4.312	24 40 14.6	9.50	1 10.8
14	16 43 39.24	2.950	24 35 16.6	15.39	1 8.3
15	16 44 32.35	+ 1.450	24 27 53.2	21.62	1 5.2
16	16 44 48.06	− 0.166	−24 17 55.7	+28.23	1 1.5
17	16 44 23.51	1.897	24 5 15.4	35.19	0 57.2
18	16 43 16.34	3.712	23 49 43.9	42.48	0 52.1
19	16 41 25.02	5.566	23 31 14.8	50.00	0 46.3
20	16 38 49.18	7.412	23 9 43.5	57.61	0 39.7
21	16 35 29.96	− 9.170	−22 45 11.1	+65.05	0 32.5
22	16 31 30.40	10.758	22 17 44.9	72.01	0 24.6
23	16 26 55.62	12.090	21 47 41.9	78.05	0 16.1
24	16 21 52.82	13.078	21 15 29.3	82.79	0 7.2 23 57.9
25	16 16 31.13	13.654	20 41 46.2	85.52	23 48.5
26	16 11 1.04	−13.773	−20 7 22.2	+86.07	23 39.2
27	16 5 33.72	13.424	19 33 14.7	84.12	23 30.0
28	16 0 20.18	12.633	19 0 24.3	79.66	23 21.4
29	15 55 30.39	11.457	18 29 49.6	72.86	23 13.2
30	15 51 12.68	9.974	18 2 22.3	64.19	23 5.6
31	15 47 33.39	− 8.272	−17 38 43.1	+53.95	22 57.7
32	15 44 36.68	− 6.441	−17 19 19.9	+42.69	22 52.5

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter . .	3.″1	3.″4	3.″8	4.″3	4.″8	4.″9
Hor. Parallax . .	8.2	9.0	10.0	11.4	12.7	13.0

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	15 47 33.39	− 8.272	−17 38 43.1	+53.95	22 57.7
2	15 44 36.68	6.441	17 19 19.9	42.69	22 52.5
3	15 42 24.63	4.562	17 4 26.9	31.51	22 47.1
4	15 40 57.62	2.697	16 54 6.4	20.26	22 42.4
5	15 40 14.66	− 0.898	16 48 10.5	+ 9.51	22 38.4
6	15 40 13.73	+ 0.802	−16 46 23.9	− 0.48	22 35.1
7	15 40 52.21	2.382	16 48 26.1	9.54	22 32.4
8	15 42 7.06	3.883	16 53 53.6	17.58	22 30.2
9	15 43 55.13	5.151	17 2 21.6	24.58	22 28.5
10	15 46 13.29	6.341	17 13 25.4	30.56	22 27.3
11	15 48 58.55	+ 7.411	−17 26 41.1	−35.58	22 26.5
12	15 52 8.11	8.366	17 41 46.3	39.71	22 26.1
13	15 55 39.39	9.223	17 58 20.5	43.02	22 26.0
14	15 59 30.07	9.987	18 16 5.0	45.58	22 26.2
15	16 3 38.11	10.666	18 34 42.8	47.46	22 26.6
16	16 8 1.58	+11.278	−18 53 58.6	−48.76	22 27.3
17	16 12 38.93	11.824	19 13 39.2	49.54	22 28.2
18	16 17 28.69	12.314	19 33 32.8	49.86	22 29.2
19	16 22 29.60	12.754	19 53 28.8	49.75	22 30.4
20	16 27 40.55	13.152	20 13 17.9	49.29	22 31.8
21	16 33 0.60	+13.512	−20 32 52.2	−48.51	22 33.3
22	16 38 28.88	13.840	20 52 4.2	47.45	22 35.0
23	16 44 4.67	14.138	21 10 47.6	46.14	22 36.7
24	16 49 47.30	14.411	21 28 56.8	44.60	22 38.6
25	16 55 36.22	14.662	21 46 26.8	42.86	22 40.4
26	17 1 30.92	+14.893	−22 3 12.9	−40.95	22 42.6
27	17 7 30.95	15.106	22 19 11.2	38.88	22 44.8
28	17 13 35.89	15.304	22 34 18.1	36.67	22 47.0
29	17 19 45.42	15.488	22 48 30.3	34.32	22 49.3
30	17 25 59.21	15.660	23 1 44.8	31.86	22 51.6
31	17 32 16.96	+15.818	−23 13 59.0	−29.30	22 54.0
32	17 38 38.43	+15.969	−23 25 10.4	−26.64	22 56.5

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter . .	4.″5	4.″0	3.″5	3.″1	2.″9	2.″7	2.″5
Hor. Parallax . .	12.0	10.5	9.2	8.3	7.6	7.1	6.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	16 42 36.52	+13.113	−20 59 34.4	−30.30	21 58.4	1	19 28 59.31	+13.356	−21 59 10.9	+21.62	22 42.7
2	16 47 51.70	13.152	21 11 23.7	28 80	21 59.7	2	19 34 19.53	13.328	21 50 12.3	23.27	22 44.1
3	16 53 7.79	13.190	21 22 36.7	27.28	22 1.1	3	19 39 39.06	13.298	21 40 34.2	24.91	22 45.5
4	16 58 24.79	13.226	21 33 13.1	25.74	22 2.4	4	19 44 57.86	13.267	21 30 17.0	26.53	22 46.8
5	17 3 42.63	13.261	21 43 12.2	24.18	22 3.8	5	19 50 15.88	13.234	21 19 21.0	28.13	22 48.2
6	17 9 1.29	+13.294	−21 52 33.5	−22.60	22 5.1	6	19 55 33.09	+13.199	−21 7 46.8	+29.72	22 49.5
7	17 14 20.72	13.325	22 1 16.7	21.00	22 6.5	7	20 0 49.44	13.163	20 55 34.6	31.29	22 50.8
8	17 19 40.87	13.355	22 9 21.2	19.38	22 7.9	8	20 6 4.91	13.125	20 42 45.0	32.84	22 52.1
9	17 25 1.70	13.382	22 16 46.6	17.74	22 9.3	9	20 11 19.46	13.086	20 29 18.5	34.37	22 53.4
10	17 30 23.16	13.407	22 23 32.6	16.09	22 10.7	10	20 16 33.06	13.046	20 15 15.6	35.87	22 54.6
11	17 35 45.20	+13.430	−22 29 38.8	−14.42	22 12.2	11	20 21 45.68	+13.004	−20 0 36.9	+37.35	22 55.9
12	17 41 7.76	13.451	22 35 4.7	12.74	22 13.6	12	20 26 57.29	12.962	19 45 22.9	38.81	22 57.1
13	17 46 30.80	13.469	22 39 50.2	11.05	22 15.1	13	20 32 7.86	12.918	19 29 34.1	40.25	22 58.3
14	17 51 54.25	13.485	22 43 54.9	9.34	22 16.5	14	20 37 17.38	12.874	19 13 11.1	41.66	22 59.5
15	17 57 18.06	13.498	22 47 18.6	7.63	22 18.0	15	20 42 25.81	12.828	18 56 14.6	43.04	23 0.7
16	18 2 42.15	+13.509	−22 50 1.0	− 5.91	22 19.4	16	20 47 33.14	+12.782	−18 38 45.3	+44.40	23 1.8
17	18 8 6.48	13.518	22 52 2.1	4.18	22 20.9	17	20 52 39.36	12.735	18 20 43.7	45.73	23 3.0
18	18 13 30.98	13.524	22 53 21.6	2.45	22 22.3	18	20 57 44.45	12.688	18 2 10.5	47.03	23 4.1
19	18 18 55.60	13.527	22 53 59.3	− 0.71	22 23.8	19	21 2 48.40	12.640	17 43 6.4	48.30	23 5.2
20	18 24 20.27	13.528	22 53 55.4	+ 1.03	22 25.3	20	21 7 51.19	12.592	17 23 32.0	49.55	23 6.3
21	18 29 44.94	+13.527	−22 53 9.7	+ 2.77	22 26.8	21	21 12 52.83	+12.544	−17 3 28.1	+50.77	23 7.4
22	18 35 9.53	13.523	22 51 42.2	4.51	22 28.3	22	21 17 53.32	12.496	16 42 55.3	51.96	23 8.5
23	18 40 34.00	13.516	22 49 33.0	6.25	22 29.8	23	21 22 52.66	12.444	16 21 54.4	53.11	23 9.6
24	18 45 58.28	13.507	22 46 42.1	7.99	22 31.3	24	21 27 50.85	12.401	16 0 26.1	54.24	23 10.6
25	18 51 22.32	13.496	22 43 9.6	9.72	22 32.7	25	21 32 47.89	12.353	15 38 31.0	55.34	23 11.6
26	18 56 46.06	+13.483	−22 38 55.7	+11.44	22 34.2	26	21 37 43.79	+12.306	−15 16 9.9	+56.41	23 12.5
27	19 2 9.45	13.467	22 34 0.4	13.16	22 35.6	27	21 42 38.57	12.259	14 53 23.5	57.45	23 13.4
28	19 7 32.44	13.449	22 28 24.0	14.87	22 37.0	28	21 47 32.24	12.213	14 30 12.4	58.46	23 14.3
29	19 12 54.97	13.428	22 22 6.5	16.58	22 38.4	29	21 52 24.81	12.168	14 6 37.5	59.44	23 15.2
30	19 18 16.99	13.406	22 15 8.3	18.27	22 39.8	30	21 57 16.31	12.123	13 42 39.4	60.39	23 16.1
31	19 23 38.45	+13.382	−22 7 29.7	+19.95	22 41.3	31	22 2 6.74	+12.079	−13 18 18.9	+61.31	23 17.0
32	19 28 59.31	+13.356	−21 59 10.9	+21.62	22 42.7	32	22 6 56.14	+12.036	−12 53 36.6	+62.20	23 17.9

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	6″.1	6″.0	5″.9	5″.8	5″.8	5″.7	5″.6
Hor. Parallax . .	6.4	6.2	6.1	6.0	5.9	5.9	5.8

Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter	5″.5	5″.5	5″.4	5″.3	5″.3
Hor. Parallax	5.7	5.6	5.6	5.5	5.5

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

	MARCH.						APRIL.				
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	21 52 24.81	+12.168	−14 6 37.5	+59.44	23 15.2	1	0 16 50.02	+11.348	+ 0 15 30.2	+74.72	23 37.2
2	21 57 16.31	12.123	13 42 39.4	60.39	23 16.1	2	0 21 22.34	11.347	0 45 23.6	74.73	23 37.8
3	22 2 6.74	12.079	13 18 18.9	61.31	23 17.0	3	0 25 54.65	11.347	1 15 17.0	74.71	23 38.3
4	22 6 56.14	12.036	12 53 36.6	62.20	23 17.9	4	0 30 26.99	11.349	1 45 9.6	74.66	23 38.9
5	22 11 44.51	11.994	12 28 33.3	63.06	23 18.8	5	0 34 59.40	11.353	2 15 0.7	74.59	23 39.5
6	22 16 31.88	+11.953	−12 3 9.7	+63.89	23 19.6	6	0 39 31.92	+11.359	+ 2 44 49.6	+74.48	23 40.1
7	22 21 18.28	11.913	11 37 26.6	64.69	23 20.4	7	0 44 4.60	11.366	3 14 35.6	74.35	23 40.7
8	22 26 3.73	11.874	11 11 24.6	65.46	23 21.2	8	0 48 37.48	11.375	3 44 18.0	74.19	23 41.3
9	22 30 48.25	11.836	10 45 4.5	66.20	23 22.0	9	0 53 10.60	11.386	4 13 56.2	73.99	23 41.9
10	22 35 31.89	11.799	10 18 27.1	66.91	23 22.7	10	0 57 43.99	11.398	4 43 29.3	73.76	23 42.5
11	22 40 14.65	+11.764	− 9 51 33.0	+67.59	23 23.5	11	1 2 17.70	+11.412	+ 5 12 56.7	+73.51	23 43.2
12	22 44 56.58	11.730	9 24 23.1	68.23	23 24.2	12	1 6 51.78	11.428	5 42 17.6	73.23	23 43.8
13	22 49 37.69	11.697	8 56 58.0	68.85	23 25.0	13	1 11 26.26	11.445	6 11 31.3	72.91	23 44.5
14	22 54 18.04	11.665	8 29 18.5	69.43	23 25.7	14	1 16 1.16	11.464	6 40 37.0	72.56	23 45.1
15	22 58 57.64	11.634	8 1 25.4	69.99	23 26.4	15	1 20 36.54	11.485	7 9 34.1	72.18	23 45.8
16	23 3 36.52	+11.605	− 7 33 19.3	+70.51	23 27.1	16	1 25 12.44	+11.507	+ 7 38 21.7	+71.78	23 46.4
17	23 8 14.71	11.577	7 5 1.1	71.00	23 27.8	17	1 29 48.88	11.530	8 6 59.1	71.34	23 47.1
18	23 12 52.25	11.551	6 36 31.5	71.46	23 28.5	18	1 34 25.89	11.555	8 35 25.7	70.87	23 47.8
19	23 17 29.17	11.526	6 7 51.3	71.89	23 29.2	19	1 39 3.51	11.581	9 3 40.6	70.37	23 48.5
20	23 22 5.51	11.502	5 39 1.1	72.29	23 29.8	20	1 43 41.78	11.609	9 31 43.1	69.83	23 49.2
21	23 26 41.30	+11.480	− 5 10 1.7	+72.65	23 30.4	21	1 48 20.74	+11.638	+ 9 59 32.5	+69.27	23 49.9
22	23 31 16.58	11.460	4 40 53.9	72.99	23 31.0	22	1 53 0.41	11.668	10 27 8.0	68.68	23 50.6
23	23 35 51.39	11.441	4 11 38.3	73.29	23 31.7	23	1 57 40.83	11.700	10 54 28.9	68.06	23 51.4
24	23 40 25.77	11.424	3 42 15.8	73.57	23 32.3	24	2 2 22.03	11.734	11 21 34.5	67.41	23 52.1
25	23 44 59.75	11.408	3 12 47.0	73.82	23 32.9	25	2 7 4.04	11.768	11 48 23.9	66.72	23 52.9
26	23 49 33.37	+11.394	− 2 43 12.7	+74.04	23 33.5	26	2 11 46.80	+11.803	+12 14 56.6	+66.00	23 53.7
27	23 54 6.68	11.382	2 13 33.5	74.22	23 34.1	27	2 16 30.61	11.840	12 41 11.7	65.25	23 54.5
28	23 58 39.72	11.372	1 43 50.2	74.38	23 34.8	28	2 21 15.23	11.879	13 7 8.6	64.47	23 55.3
29	0 3 12.53	11.363	1 14 3.5	74.51	23 35.4	29	2 26 0.79	11.918	13 32 46.4	63.67	23 56.2
30	0 7 45.16	11.356	0 44 14.1	74.61	23 36.0	30	2 30 47.30	11.959	13 58 4.5	62.84	23 57.0
31	0 12 17.64	+11.351	− 0 14 22.6	+74.68	23 36.6	31	2 35 34.79	+11.959	+14 23 2.2	+61.97	23 57.9
32	0 16 50.02	+11.348	− 0 15 30.2	+74.72	23 37.2	32	2 40 23.28	+12.048	+14 47 38.7	+61.07	23 58.8

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter	5″.2	5″.2	5″.1	5″.1	5″.1	5″.0	Semidiameter. .	5″.0	5″.0	5″.0	5″.0	5″.0	4″.9
Hor. Parallax	5.4	5.4	5.3	5.3	5.3	5.2	Hor. Parallax. .	5.2	5.2	5.2	5.1	5.1	5.1

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign − indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	2 35 34.79	+11.999	+14 23 2.2	+61.97	23 57.9	1	5 12 56.49	+13.299	+23 22 58.3	+20.81	0 32.2
2	2 40 23.28	12.042	14 47 38.7	61.07	23 58.8	2	5 18 15.97	13.324	23 30 57.5	19.11	0 33.6
3	2 45 12.80	12.085	15 11 53.2	60.14	23 59.7	3	5 23 36.04	13.348	23 38 15.7	17.40	0 35.0
4	2 50 3.37	12.129	15 35 45.1	59.18		4	5 28 56.64	13.369	23 44 52.6	15.67	0 36.4
5	2 54 55.00	12.174	15 59 13.8	58.19	0 0.6	5	5 34 17.73	13.388	23 50 47.9	13.93	0 37.8
6	2 59 47.73	+12.220	+16 22 18.3	+57.17	0 1.6	6	5 39 39.25	+13.405	+23 56 1.4	+12.18	0 39.2
7	3 4 41.56	12.266	16 44 57.9	56.12	0 2.6	7	5 45 1.15	13.420	24 0 32.6	10.42	0 40.6
8	3 9 36.50	12.312	17 7 12.0	55.04	0 3.5	8	5 50 23.37	13.432	24 4 21.4	8.65	0 42.0
9	3 14 32.55	12.359	17 28 59.7	53.93	0 4.5	9	5 55 45.86	13.442	24 7 27.6	6.87	0 43.5
10	3 19 29.73	12.406	17 50 20.3	52.79	0 5.5	10	6 1 8.55	13.449	24 9 51.0	5.08	0 44.9
11	3 24 28.05	+12.453	+18 11 13.1	+51.61	0 6.5	11	6 6 31.38	+13.453	+24 11 31.5	+ 3.29	0 46.4
12	3 29 27.51	12.500	18 31 37.5	50.41	0 7.6	12	6 11 54.28	13.455	24 12 29.1	+ 1.50	0 47.8
13	3 34 28.10	12.548	18 51 32.8	49.18	0 8.6	13	6 17 17.20	13.454	24 12 43.6	− 0.29	0 49.3
14	3 39 29.82	12.595	19 10 58.1	47.92	0 9.7	14	6 22 40.07	13.451	24 12 15.1	2.09	0 50.7
15	3 44 32.67	12.642	19 29 52.9	46.63	0 10.8	15	6 28 2.83	13.445	24 11 3.5	3.89	0 52.1
16	3 49 36.64	+12.689	+19 48 16.3	+45.31	0 11.9	16	6 33 25.42	+13.437	+24 9 8.8	− 5.68	0 53.5
17	3 54 41.73	12.735	20 6 7.6	43.96	0 13.0	17	6 38 47.78	13.426	24 6 31.1	7.47	0 55.0
18	3 59 47.92	12.780	20 23 26.2	42.58	0 14.2	18	6 44 9.84	13.412	24 3 10.7	9.26	0 56.4
19	4 4 55.18	12.825	20 40 11.5	41.18	0 15.4	19	6 49 31.54	13.396	23 59 7.2	11.03	0 57.8
20	4 10 3.50	12.868	20 56 22.9	39.75	0 16.6	20	6 54 52.81	13.377	23 54 21.3	12.80	0 59.2
21	4 15 12.85	+12.911	+21 11 59.7	+38.30	0 17.8	21	7 0 13.61	+13.356	+23 48 53.0	−14.56	1 0.6
22	4 20 23.23	12.953	21 27 1.2	36.82	0 19.1	22	7 5 33.87	13.332	23 42 42.5	16.31	1 2.0
23	4 25 34.59	12.994	21 41 26.9	35.32	0 20.3	23	7 10 53.54	13.306	23 35 50.1	18.05	1 3.4
24	4 30 46.93	13.034	21 55 16.2	33.79	0 21.6	24	7 16 12.56	13.278	23 28 16.2	19.78	1 4.8
25	4 36 0.20	13.072	22 8 28.6	32.24	0 22.9	25	7 21 30.88	13.248	23 20 0.9	21.49	1 6.2
26	4 41 14.38	+13.109	+22 21 3.5	+30.67	0 24.2	26	7 26 48.46	+13.216	+23 11 4.7	−23.19	1 7.6
27	4 46 29.43	13.145	22 33 0.5	29.07	0 25.5	27	7 32 5.24	13.182	23 1 27.9	24.87	1 8.9
28	4 51 45.32	13.179	22 44 18.9	27.45	0 26.8	28	7 37 21.19	13.146	22 51 10.9	26.54	1 10.2
29	4 57 2.01	13.212	22 54 58.3	25.82	0 28.1	29	7 42 36.25	13.108	22 40 14.1	28.19	1 11.5
30	5 2 19.46	13.243	23 4 58.3	24.17	0 29.5	30	7 47 50.39	13.069	22 28 37.9	29.82	1 12.8
31	5 7 37.64	+13.272	+23 14 18.5	+22.50	0 30.8	31	7 53 3.57	+13.028	+22 16 22.8	−31.43	1 14.1
32	5 12 56.49	+13.299	+23 22 58.3	+20.81	0 32.2	32	7 58 15.75	+12.986	+22 3 29.4	−33.02	1 15.4

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	4″.9	4″.9	4″.9	5″.0	5″.0	5″.0	5″.0	Semidiameter . .	5″.0	5″.1	5″.1	5″.1	5″.2	5″.2
Hor. Parallax . .	5.1	5.1	5.1	5.1	5.1	5.2	5.2	Hor. Parallax . .	5.2	5.2	5.3	5.3	5.4	5.4

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R.A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	7 53 3.57	+13.028	+22 16 22.8	−31.43	1 14.1	1	10 25 13.71	+11.514	+11 28 57.0	−68.43	1 44.1
2	7 58 15.75	12.986	22 3 29.4	33.02	1 15.4	2	10 29 49.54	11.473	11 1 25.9	69.15	1 44.7
3	8 3 26.91	12.942	21 49 57.9	34.59	1 16.6	3	10 34 24.40	11.433	10 33 37.8	69.85	1 45.4
4	8 8 37.01	12.898	21 35 49.0	36.14	1 17.8	4	10 38 58.32	11.395	10 5 33.3	70.51	1 46.0
5	8 13 46.03	12.852	21 21 3.3	37.67	1 19.0	5	10 43 31.34	11.358	9 37 13.2	71.15	1 46.6
6	8 18 53.93	+12.806	+21 5 41.2	−39.17	1 20.2	6	10 48 3.49	+11.322	+ 9 8 38.2	−71.76	1 47.2
7	8 24 0.71	12.758	20 49 43.3	40.65	1 21.3	7	10 52 34.80	11.288	8 39 49.0	72.34	1 47.8
8	8 29 6.33	12.710	20 33 10.2	42.10	1 22.5	8	10 57 5.30	11.255	8 10 46.3	72.88	1 48.3
9	8 34 10.77	12.660	20 16 2.5	43.53	1 23.6	9	11 1 35.03	11.223	7 41 30.8	73.40	1 48.8
10	8 39 14.01	12.610	19 58 20.9	44.93	1 24.8	10	11 6 4.03	11.193	7 12 3.2	73.89	1 49.3
11	8 44 16.03	+12.559	+19 40 6.0	−46.30	1 25.9	11	11 10 32.33	+11.165	+ 6 42 24.3	−74.35	1 49.8
12	8 49 16.82	12.507	19 21 18.4	47.65	1 27.0	12	11 14 59.97	11.138	6 12 34.8	74.78	1 50.4
13	8 54 16.38	12.455	19 1 58.8	48.97	1 28.1	13	11 19 26.98	11.113	5 42 35.6	75.18	1 50.9
14	8 59 14.69	12.403	18 42 7.7	50.27	1 29.1	14	11 23 53.39	11.089	5 12 27.1	75.55	1 51.4
15	9 4 11.74	12.351	18 21 46.0	51.53	1 30.1	15	11 28 19.24	11.066	4 42 10.1	75.88	1 51.9
16	9 9 7.53	+12.298	+18 0 54.4	−52.77	1 31.1	16	11 32 44.57	+11.045	+ 4 11 45.3	−76.18	1 52.3
17	9 14 2.06	12.246	17 39 33.4	53.97	1 32.0	17	11 37 9.42	11.026	3 41 13.5	76.46	1 52.8
18	9 18 55.33	12.193	17 17 43.8	55.15	1 32.9	18	11 41 33.82	11.008	3 10 35.3	76.71	1 53.2
19	9 23 47.33	12.141	16 55 26.4	56.29	1 33.8	19	11 45 57.82	10.992	2 39 51.6	76.93	1 53.7
20	9 28 38.08	12.088	16 32 41.8	57.41	1 34.7	20	11 50 21.44	10.977	2 9 3.0	77.11	1 54.2
21	9 33 27.57	+12.036	+16 9 30.9	−58.49	1 35.6	21	11 54 44.73	+10.964	+ 1 38 10.4	−77.27	1 54.7
22	9 38 15.82	11.985	15 45 54.4	59.55	1 36.5	22	11 59 7.73	10.953	1 7 14.2	77.40	1 55.1
23	9 43 2.84	11.934	15 21 52.9	60.57	1 37.3	23	12 3 30.48	10.943	0 36 15.2	77.50	1 55.6
24	9 47 48.65	11.884	14 57 27.2	61.56	1 38.1	24	12 7 53.02	10.936	+ 0 5 14.2	77.57	1 56.0
25	9 52 33.25	11.834	14 32 38.0	62.52	1 38.9	25	12 12 15.41	10.930	− 0 25 48.2	77.62	1 56.4
26	9 57 16.67	+11.785	+14 7 26.1	−63.46	1 39.7	26	12 16 37.67	+10.926	− 0 56 51.4	−77.63	1 56.8
27	10 1 58.93	11.737	13 41 52.1	64.36	1 40.5	27	12 20 59.85	10.924	1 27 54.6	77.62	1 57.3
28	10 6 40.05	11.690	13 15 56.9	65.24	1 41.3	28	12 25 21.99	10.923	1 58 57.1	77.58	1 57.7
29	10 11 20.07	11.644	12 49 41.0	66.08	1 42.0	29	12 29 44.14	10.924	2 29 58.3	77.51	1 58.2
30	10 15 59.00	11.600	12 23 5.2	66.89	1 42.7	30	12 34 6.34	10.927	3 0 57.5	77.41	1 58.6
31	10 20 36.87	+11.556	+11 56 10.3	−67.67	1 43.4	31	12 38 28.63	+10.932	− 3 31 54.0	−77.29	1 59.1
32	10 25 13.71	+11.514	+11 28 57.0	−68.43	1 44.1	32	12 42 51.06	+10.938	− 4 2 47.3	−77.14	1 59.5

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	5″.3	5″.3	5″.4	5″.5	5″.6	5″.6	Semidiameter . .	5″.7	5″.8	5″.9	6″.0	6″.2	6″.3
Hor. Parallax . .	5.5	5.5	5.6	5.6	5.7	5.8	Hor. Parallax . .	5.9	6.0	6.1	6.3	6.4	6.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 42 51.06	+10.938	− 4 2 47.3	−77.14	1 59.5
2	12 47 13.66	10.946	4 33 36.6	76.96	1 59.9
3	12 51 36.48	10.956	5 4 21.2	76.75	2 0.3
4	12 55 59.56	10.968	5 35 0.4	76.51	2 0.8
5	13 0 22.95	10.982	6 5 33.6	76.24	2 1.2
6	13 4 46.68	+10.997	− 6 36 0.0	−75.95	2 1.7
7	13 9 10.80	11.014	7 6 19.0	75.62	2 2.1
8	13 13 35.35	11.032	7 36 29.7	75.27	2 2.6
9	13 18 0.35	11.052	8 6 31.6	74.89	2 3.1
10	13 22 25.84	11.073	8 36 24.0	74.47	2 3.6
11	13 26 51.86	+11.096	− 9 6 6.0	−74.02	2 4.1
12	13 31 18.44	11.120	9 35 37.0	73.55	2 4.6
13	13 35 45.61	11.145	10 4 56.2	73.04	2 5.1
14	13 40 13.41	11.172	10 34 2.8	72.50	2 5.6
15	13 44 41.87	11.200	11 2 56.2	71.93	2 6.1
16	13 49 11.02	+11.229	−11 31 35.6	−71.34	2 6.6
17	13 53 40.89	11.259	12 0 0.3	70.71	2 7.2
18	13 58 11.50	11.291	12 28 9.6	70.05	2 7.7
19	14 2 42.88	11.324	12 56 2.6	69.36	2 8.3
20	14 7 15.05	11.358	13 23 38.7	68.64	2 8.9
21	14 11 46.05	+11.393	−13 50 57.1	−67.88	2 9.5
22	14 16 21.89	11.426	14 17 57.1	67.10	2 10.1
23	14 20 56.61	11.465	14 44 37.9	66.29	2 10.8
24	14 25 32.22	11.503	15 10 58.8	65.45	2 11.4
25	14 30 8.75	11.542	15 36 59.2	64.58	2 12.1
26	14 34 46.21	+11.581	−16 2 38.3	−63.68	2 12.8
27	14 39 24.63	11.621	16 27 55.4	62.74	2 13.5
28	14 44 4.03	11.662	16 52 49.9	61.78	2 14.2
29	14 48 44.42	11.704	17 17 20.9	60.79	2 14.9
30	14 53 25.82	11.746	17 41 27.8	59.77	2 15.6
31	14 58 8.25	+11.789	−18 5 9.8	−58.72	2 16.4
32	15 2 51.70	+11.832	−18 28 26.3	−57.64	2 17.2

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . . .	6″.4	6″.6	6″.8	6″.9	7″.1	7″.3
Hor. Parallax . . .	6.7	6.8	7.0	7.2	7.4	7.6

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	14 58 8.25	+11.789	−18 5 9.8	−58.72	2 16.4
2	15 2 51.70	11.832	18 28 26.3	57.64	2 17.2
3	15 7 36.20	11.875	18 51 16.5	56.53	2 18.0
4	15 12 21.74	11.919	19 13 39.7	55.40	2 18.8
5	15 17 8.34	11.965	19 35 35.3	54.24	2 19.7
6	15 21 55.99	+12.007	−19 57 2.6	−53.04	2 20.5
7	15 26 44.68	12.051	20 18 0.8	51.81	2 21.4
8	15 31 34.41	12.094	20 38 29.3	50.56	2 22.3
9	15 36 25.17	12.136	20 58 27.2	49.27	2 23.2
10	15 41 16.95	12.178	21 17 53.9	47.96	2 24.1
11	15 46 9.73	+12.219	−21 36 48.9	−46.62	2 25.1
12	15 51 3.49	12.260	21 55 11.4	45.25	2 26.0
13	15 55 58.21	12.299	22 13 0.8	43.86	2 27.0
14	16 0 53.85	12.337	22 30 16.4	42.44	2 28.0
15	16 5 50.38	12.374	22 46 57.6	40.99	2 29.0
16	16 10 47.78	+12.409	−23 3 3.7	−39.52	2 30.0
17	16 15 46.00	12.443	23 18 34.2	38.02	2 31.0
18	16 20 45.01	12.475	23 33 28.5	36.50	2 32.0
19	16 25 44.77	12.505	23 47 46.1	34.96	2 33.1
20	16 30 45.25	12.534	24 1 26.4	33.40	2 34.1
21	16 35 46.38	+12.561	−24 14 29.0	−31.81	2 35.2
22	16 40 48.12	12.585	24 26 53.3	30.21	2 36.3
23	16 45 50.41	12.607	24 38 38.9	28.59	2 37.4
24	16 50 53.21	12.627	24 49 45.5	26.95	2 38.5
25	16 55 56.47	12.645	25 0 12.5	25.30	2 39 7
26	17 1 0.13	+12.660	−25 9 59.8	−23.63	2 40.8
27	17 6 4.13	12.673	25 19 6.8	21.95	2 41.9
28	17 11 8.41	12.683	25 27 33.3	20.26	2 43.0
29	17 16 12.91	12.691	25 35 19.0	18.55	2 44.2
30	17 21 17.56	12.696	25 42 23.7	16.84	2 45.3
31	17 26 22.31	+12.698	−25 48 47.1	−15.11	2 46.4
32	17 31 27.08	+12.698	−25 54 29.1	−13.38	2 47.5

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . .	7″.5	7″.8	8″.0	8″.3	8″.6	8″.9
Hor. Parallax . .	7.8	8.0	8.3	8.6	8.9	9.2

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	17 31 27.08	+12.698	−25 54 29.1	−13.38	2 47.5
2	17 36 31.80	12.694	25 59 29.4	11.64	2 48.7
3	17 41 36.41	12.688	26 3 47.9	9.90	2 49.8
4	17 46 40.82	12.679	26 7 24.4	8.15	2 50.9
5	17 51 44.96	12.666	26 10 19.0	6.40	2 52.0
6	17 56 48.76	+12.650	−26 12 31.6	− 4.65	2 53.2
7	18 1 52.13	12.631	26 14 2.2	2.90	2 54.3
8	18 6 54.99	12.608	26 14 50.7	− 1.15	2 55.4
9	18 11 57.26	12.581	26 14 57.3	+ 0.60	2 56.5
10	18 16 58.85	12.551	26 14 22.1	2.34	2 57.6
11	18 21 59.67	+12.517	−26 13 5.2	+ 4.07	2 58.7
12	18 26 59.62	12.479	26 11 6.7	5.79	2 59.8
13	18 31 58.62	12.438	26 8 26.8	7.51	3 0.9
14	18 36 56.59	12.393	26 5 5.9	9.22	3 1.9
15	18 41 53.44	12.344	26 1 4.3	10.91	3 2.9
16	18 46 49.08	+12.292	−25 56 22.2	+12.59	3 3.9
17	18 51 43.42	12.236	25 51 0.0	14.26	3 4.9
18	18 56 36.39	12.177	25 44 58.0	15.90	3 5.8
19	19 1 27.89	12.114	25 38 16.8	17.53	3 6.7
20	19 6 17.84	12.048	25 30 56.7	19.14	3 7.6
21	19 11 6.15	+11.978	−25 22 58.3	+20.72	3 8.4
22	19 15 52.76	11.906	25 14 22.2	22.28	3 9.2
23	19 20 37.59	11.830	25 5 8.9	23.82	3 10.0
24	19 25 20.56	11.752	24 55 18.9	25.34	3 10.7
25	19 30 1.61	11.670	24 44 52.9	26.83	3 11.5
26	19 34 40.66	+11.585	−24 33 51.4	+28.29	3 12.2
27	19 39 17.65	11.498	24 22 15.1	29.73	3 12.9
28	19 43 52.52	11.408	24 10 4.5	31.14	3 13.5
29	19 48 25.20	11.315	23 57 20.4	32.54	3 14.1
30	19 52 55.63	11.220	23 44 3.6	33.87	3 14.6
31	19 57 23.74	+11.122	−23 30 14.8	+35.19	3 15.1
32	20 1 49.47	+11.021	−23 15 54.6	+36.48	3 15.6

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter	9″.2	9″.6	10″.0	10″.5	11″.0	11″.6
Hor. Parallax	9.6	10.0	10.4	10.9	11.4	12.0

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	19 57 23.74	+11.122	−23 30 14.8	+35.19	3 15.1
2	20 1 49.47	11.021	23 15 54.6	36.48	3 15.6
3	20 6 12.75	10.918	23 1 3.8	37.74	3 16.1
4	20 10 33.53	10.812	22 45 43.3	38.97	3 16.5
5	20 14 51.73	10.704	22 29 53.8	40.16	3 16.9
6	20 19 7.31	+10.593	−22 13 36.1	+41.32	3 17.2
7	20 23 20.20	10.479	21 56 51.0	42.44	3 17.5
8	20 27 30.32	10.362	21 39 39.5	43.52	3 17.7
9	20 31 37.60	10.243	21 22 2.4	44.56	3 17.9
10	20 35 41.98	10.121	21 4 0.7	45.57	3 18.0
11	20 39 43.39	+ 9.996	−20 45 35.4	+46.54	3 18.1
12	20 43 41.76	9.867	20 26 47.3	47.47	3 18.1
13	20 47 37.02	9.736	20 7 37.4	48.35	3 18.1
14	20 51 29.09	9.602	19 48 6.8	49.19	3 18.0
15	20 55 17.90	9.464	19 28 16.4	49.99	3 17.8
16	20 59 3.38	+ 9.324	−19 8 7.3	+50.75	3 17.6
17	21 2 45.44	9.180	18 47 40.5	51.47	3 17.3
18	21 6 24.01	9.033	18 26 57.1	52.14	3 17.0
19	21 9 59.02	8.883	18 5 58.1	52.77	3 16.7
20	21 13 30.38	8.730	17 44 44.6	53.35	3 16.3
21	21 16 58.01	+ 8.573	−17 23 17.8	+53.88	3 15.8
22	21 20 21.84	8.413	17 1 38.7	54.37	3 15.2
23	21 23 41.78	8.249	16 39 48.5	54.81	3 14.6
24	21 26 57.75	8.082	16 17 48.2	55.21	3 13.9
25	21 30 9.66	7.910	15 55 38.9	55.56	3 13.2
26	21 33 17.42	+ 7.735	−15 33 21.7	+55.86	3 12.3
27	21 36 20.93	7.555	15 10 58.0	56.11	3 11.4
28	21 39 20.10	7.372	14 48 28.9	56.31	3 10.4
29	21 42 18.82	7.186	14 25 55.5	56.47	3 9.4
30	21 45 5.00	6.994	14 3 18.9	56.58	3 8.3
31	21 47 50.52	+ 6.798	−13 40 40.5	+56.63	3 7.1
32	21 50 31.26	+ 6.596	−13 18 1.4	+56.63	3 5.9

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter . .	12″.2	12″.9	13″.6	14″.5	15″.4	16″.5	17″.7
Hor. Parallax . .	12.6	13.3	14.1	15.0	16.0	17.1	18.4

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	0 11 8.02	+5.921	+1 2 4.9	+42.15	5 25.3
2	0 13 30.22	5.929	1 18 56.2	42.12	5 23.7
3	0 15 52.59	5.937	1 35 46.7	42.09	5 22.1
4	0 18 15.15	5.945	1 52 36.3	42.05	5 20.6
5	0 20 37.89	5.953	2 9 24.9	42.00	5 19.0
6	0 23 0.83	+5.961	+2 26 12.3	+41.95	5 17.5
7	0 25 23.95	5.969	2 42 58.5	41.90	5 15.9
8	0 27 47.27	5.977	2 59 43.3	41.84	5 14.4
9	0 30 10.78	5.985	3 16 26.7	41.78	5 12.9
10	0 32 34.49	5.993	3 33 8.5	41.71	5 11.3
11	0 34 58.42	+6.001	+3 49 48.7	+41.64	5 9.8
12	0 37 22.55	6.010	4 6 27.1	41.56	5 8.2
13	0 39 46.90	6.019	4 23 3.6	41.48	5 6.7
14	0 42 11.47	6.028	4 39 38.2	41.39	5 5.2
15	0 44 36.26	6.037	4 56 10.6	41.30	5 3.6
16	0 47 1.27	+6.047	+5 12 40.9	+41.21	5 2.1
17	0 49 26.51	6.056	5 29 8.9	41.11	5 0.6
18	0 51 51.98	6.065	5 45 34.3	41.00	4 59.1
19	0 54 17.68	6.075	6 1 57.2	40.89	4 57.6
20	0 56 43.60	6.084	6 18 17.3	40.78	4 56.1
21	0 59 9.76	+6.094	+6 34 34.6	+40.66	4 54.6
22	1 1 36.14	6.103	6 50 48.9	40.53	4 53.1
23	1 4 2.75	6.113	7 7 0.0	40.39	4 51.6
24	1 6 29.59	6.122	7 23 7.9	40.25	4 50.1
25	1 8 56.66	6.132	7 39 12.3	40.11	4 48.6
26	1 11 23.95	+6.142	+7 55 13.1	+39.96	4 47.1
27	1 13 51.47	6.151	8 11 10.2	39.80	4 45.6
28	1 16 19.22	6.161	8 27 3.3	39.64	4 44.1
29	1 18 47.19	6.170	8 42 52.6	39.47	4 42.6
30	1 21 15.39	6.180	8 58 37.7	39.30	4 41.2
31	1 23 43.84	+6.190	+9 14 18.6	+39.12	4 39.7
32	1 26 12.51	+6.200	+9 29 55.2	+38.93	4 38.3

Day of the Month.	0th.	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″	″
Semidiameter . .	4.1	4.0	3.8	3.7	3.6	3.5	3.4
Hor. Parallax . .	7.2	7.0	6.7	6.5	6.3	6.1	5.9

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	1 26 12.51	+6.200	+9 29 55.2	+38.93	4 38.3
2	1 28 41.43	6.210	9 45 27.2	38.74	4 36.8
3	1 31 10.58	6.220	10 0 54.7	38.55	4 35.4
4	1 33 39.98	6.230	10 16 17.6	38.35	4 33.9
5	1 36 9.64	6.241	10 31 35.6	38.15	4 32.5
6	1 38 39.55	+6.252	+10 46 48.8	+37.94	4 31.1
7	1 41 9.72	6.263	11 1 57.0	37.73	4 29.6
8	1 43 40.14	6.274	11 17 0.0	37.52	4 28.2
9	1 46 10.84	6.285	11 31 57.9	37.30	4 26.7
10	1 48 41.81	6.297	11 46 50.6	37.08	4 25.3
11	1 51 13.06	+6.308	+12 1 37.9	+36.85	4 23.9
12	1 53 44.60	6.320	12 16 19.7	36.62	4 22.4
13	1 56 16.41	6.332	12 30 55.9	36.38	4 21.0
14	1 58 48.51	6.344	12 45 26.3	36.14	4 19.6
15	2 1 20.89	6.356	12 59 50.9	35.90	4 18.2
16	2 3 53.57	+6.368	+13 14 9.6	+35.65	4 16.8
17	2 6 26.54	6.380	13 28 22.3	35.39	4 15.4
18	2 8 59.80	6.392	13 42 28.8	35.13	4 14.0
19	2 11 33.35	6.404	13 56 29.0	34.87	4 12.6
20	2 14 7.18	6.416	14 10 22.7	34.60	4 11.3
21	2 16 41.30	+6.427	+14 24 10.0	+34.32	4 9.9
22	2 19 15.71	6.439	14 37 50.4	34.04	4 8.6
23	2 21 50.41	6.451	14 51 24.0	33.75	4 7.2
24	2 24 25.39	6.463	15 4 50.7	33.46	4 5.9
25	2 27 0.65	6.475	15 18 10.3	33.17	4 4.5
26	2 29 36.19	+6.486	+15 31 22.7	+32.87	4 3.1
27	2 32 12.01	6.498	15 44 27.9	32.56	4 1.8
28	2 34 48.11	6.510	15 57 25.6	32.25	4 0.5
29	2 37 24.50	6.522	16 10 15.8	31.94	3 59.1
30	2 40 1.17	6.534	16 22 58.5	31.62	3 57.8
31	2 42 38.13	+6.546	+16 35 33.5	+31.30	3 56.4
32	2 45 15.37	+6.558	+16 48 0.6	+30.97	3 55.1

Day of the Month.	4th.	9th.	14th.	19th.	24th.
	″	″	″	″	″
Semidiameter	3.3	3.2	3.1	3.0	2.9
Hor. Parallax	5.7	5.6	5.4	5.3	5.1

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	2 37 24.50	+6.522	+16 10 15.8	+31.94	3 59.1
2	2 40 1.17	6.534	16 22 58.5	31.62	3 57.8
3	2 42 38.13	6.546	16 35 33.5	31.30	3 56.4
4	2 45 15.37	6.558	16 48 0.6	30.97	3 55.1
5	2 47 52.89	6.570	17 0 19.8	30.64	3 53.8
6	2 50 30.70	+6.582	+17 12 31.0	+30.30	3 52.5
7	2 53 8.80	6.594	17 24 34.2	29.96	3 51.2
8	2 55 47.20	6.606	17 36 29.2	29.62	3 49.9
9	2 58 25.89	6.618	17 48 16.0	29.27	3 48.6
10	3 1 4.88	6.630	17 59 54.5	28.92	3 47.3
11	3 3 44.17	+6.642	+18 11 24.5	+28.57	3 46.0
12	3 6 23.75	6.655	18 22 46.1	28.22	3 44.8
13	3 9 3.63	6.668	18 33 59.1	27.86	3 43.5
14	3 11 43.80	6.681	18 45 3.4	27.50	3 42.2
15	3 14 24.27	6.693	18 55 58.8	27.13	3 40.9
16	3 17 5.04	+6.705	+19 6 45.5	+26.76	3 39.6
17	3 19 46.10	6.717	19 17 23.1	26.38	3 38.4
18	3 22 27.45	6.729	19 27 51.7	26.00	3 37.1
19	3 25 9.09	6.741	19 38 11.1	25.61	3 35.9
20	3 27 51.00	6.753	19 48 21.3	25.22	3 34.6
21	3 30 33.20	+6.764	+19 58 22.1	+24.83	3 33.4
22	3 33 15.67	6.775	20 8 13.4	24.44	3 32.2
23	3 35 58.41	6.786	20 17 55.2	24.04	3 30.9
24	3 38 41.41	6.797	20 27 27.3	23.64	3 29.7
25	3 41 24.67	6.808	20 36 49.6	23.23	3 28.5
26	3 44 8.18	+6.818	+20 46 2.1	+22.82	3 27.3
27	3 46 51.94	6.828	20 55 4.7	22.40	3 26.1
28	3 49 35.94	6.838	21 3 57.4	21.98	3 24.9
29	3 52 20.18	6.848	21 12 39.9	21.56	3 23.7
30	3 55 4.66	6.858	21 21 12.3	21.14	3 22.5
31	3 57 49.37	+6.868	+21 29 34.5	+20.71	3 21.3
32	4 0 34.31	+6.877	+21 37 46.4	+20.28	3 20.1

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	2″.9	2″.8	2″.7	2″.7	2″.6	2″.6	2″.5
Hor. Parallax . .	5.0	4.9	4.8	4.7	4.6	4.5	4.4

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	4 0 34.31	+6.877	+21 37 46.4	+20.28	3 20.1
2	4 3 19.48	6.887	21 45 47.9	19.85	3 18.9
3	4 6 4.87	6.896	21 53 39.1	19.42	3 17.7
4	4 8 50.47	6.905	22 1 19.9	18.98	3 16.5
5	4 11 36.30	6.914	22 8 50.1	18.54	3 15.3
6	4 14 22.33	+6.923	+22 16 9.7	+18.10	3 14.2
7	4 17 8.58	6.932	22 23 18.7	17.65	3 13.0
8	4 19 55.04	6.941	22 30 17.0	17.20	3 11.9
9	4 22 41.70	6.949	22 37 4.6	16.75	3 10.7
10	4 25 28.56	6.957	22 43 41.5	16.30	3 9.6
11	4 28 15.62	+6.965	+22 50 7.4	+15.85	3 8.4
12	4 31 2.87	6.973	22 56 22.5	15.40	3 7.3
13	4 33 50.31	6.980	23 2 26.7	14.94	3 6.1
14	4 36 37.93	6.987	23 8 19.8	14.48	3 5.0
15	4 39 25.72	6.994	23 14 1.9	14.02	3 3.8
16	4 42 13.67	+7.001	+23 19 32.8	+13.56	3 2.7
17	4 45 1.78	7.007	23 24 52.6	13.09	3 1.5
18	4 47 50.04	7.013	23 30 1.2	12.62	3 0.4
19	4 50 38.44	7.019	23 34 58.5	12.15	2 59.2
20	4 53 26.97	7.024	23 39 44.6	11.68	2 58.1
21	4 56 15.62	+7.029	+23 44 19.3	+11.21	2 57.0
22	4 59 4.38	7.033	23 48 42.6	10.74	2 55.9
23	5 1 53.26	7.037	23 52 54.4	10.26	2 54.7
24	5 4 42.23	7.041	23 56 55.0	9.78	2 53.6
25	5 7 31.27	7.045	24 0 44.0	9.30	2 52.5
26	5 10 20.40	+7.048	+24 4 21.4	+ 8.82	2 51.4
27	5 13 9.59	7.051	24 7 47.4	8.34	2 50.3
28	5 15 58.85	7.053	24 11 1.9	7.86	2 49.2
29	5 18 48.17	7.055	24 14 4.7	7.38	2 48.0
30	5 21 37.53	7.057	24 16 56.0	6.89	2 46.9
31	5 24 26.94	+7.059	+24 19 35.7	+ 6.41	2 45.8
32	5 27 16.38	+7.060	+24 22 3.8	+ 5.93	2 44.7

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	2″.5	2″.4	2″.4	2″.3	2″.3	2″.3
Hor. Parallax . .	4.3	4.2	4.2	4.1	4.1	4.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Honr. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	5 24 26.94	+7.059	+24 19 35.7	+6.41	2 45.8	1	6 51 40.83	+6.956	+24 6 43.1	− 8.36	2 10.9
2	5 27 16.38	7.060	24 22 3.8	5.93	2 44.7	2	6 54 27.69	6.948	24 3 17.1	8.82	2 9.7
3	5 30 5.84	7.061	24 24 20.4	5.45	2 43.6	3	6 57 14.35	6.940	23 59 40.2	9.27	2 8.5
4	5 32 55.34	7.062	24 26 25.4	4.97	2 42.5	4	7 0 0.81	6.932	23 55 52.4	9.72	2 7.3
5	5 35 44.85	7.063	24 28 18.7	4.48	2 41.4	5	7 2 47.06	6.923	23 51 53.8	10.17	2 6.1
6	5 38 34.37	+7.064	+24 30 0.4	+4.00	2 40.2	6	7 5 33.10	+6.914	+23 47 44.4	−10.62	2 5.0
7	5 41 23.90	7.064	24 31 30.5	3.51	2 39.1	7	7 8 18.93	6.905	23 43 24.3	11.06	2 3.8
8	5 44 13.43	7.063	24 32 49.1	3.03	2 38.0	8	7 11 4.53	6.896	23 38 53.6	11.50	2 2.6
9	5 47 2.96	7.063	24 33 56.0	2.54	2 36.9	9	7 13 49.91	6.886	23 34 12.3	11.94	2 1.4
10	5 49 52.47	7.062	24 34 51.4	2.06	2 35.8	10	7 16 35.06	6.876	23 29 20.5	12.38	2 0.2
11	5 52 41.97	+7.061	+24 35 35.1	+1.58	2 34.6	11	7 19 19.98	+6.866	+23 24 18.2	−12.81	1 59 0
12	5 55 31.43	7.059	24 36 7.2	1.09	2 33.5	12	7 22 4.66	6.856	23 19 5.4	13.24	1 57 8
13	5 58 20.85	7.057	24 36 27.8	0.61	2 32.4	13	7 24 49.09	6.846	23 13 42.3	13.67	1 56 6
14	6 1 10.23	7.055	24 36 36.8	+0.13	2 31.3	14	7 27 33.27	6.836	23 8 8.9	14.10	1 55 4
15	6 3 59.55	7.053	24 36 34.2	−0.35	2 30.2	15	7 30 17.19	6.825	23 2 25.3	14.53	1 54.2
16	6 6 48.81	+7.051	+24 36 20.1	−0.83	2 29.0	16	7 33 0.85	+6.814	+22 56 31.6	−14.95	1 53.0
17	6 9 38.00	7.048	24 35 54.3	1.31	2 27.9	17	7 35 44.23	6.802	22 50 27.8	15.37	1 51.8
18	6 12 27.10	7.044	24 35 17.1	1.79	2 26.8	18	7 38 27.34	6.790	22 44 14.0	15.78	1 50.6
19	6 15 16.11	7.040	24 34 28.4	2.27	2 25.7	19	7 41 10.16	6.778	22 37 50.2	16.19	1 49.4
20	6 18 5.02	7.036	24 33 28.2	2.75	2 24.6	20	7 43 52.70	6.766	22 31 16.7	16.60	1 48.1
21	6 20 53.82	+7.031	+24 32 16.6	−3.22	2 23.4	21	7 46 34.95	+6.754	+22 24 33.3	−17.00	1 46.9
22	6 23 42.49	7.026	24 30 53.5	3.70	2 22.3	22	7 49 16.90	6.742	22 17 40.3	17.40	1 45.7
23	6 26 31.03	7.020	24 29 19.0	4.17	2 21.2	23	7 51 58.55	6.730	22 10 37.7	17.80	1 44.4
24	6 29 19.44	7.014	24 27 33.2	4.64	2 20.0	24	7 54 39.90	6.717	22 3 25.6	18.20	1 43.2
25	6 32 7.70	7.008	24 25 36.1	5.11	2 18.9	25	7 57 20.95	6.704	21 56 4.0	18.59	1 41.9
26	6 34 55.81	+7.001	+24 23 27.7	−5.58	2 17.7	26	8 0 1.69	+6.692	+21 48 33.1	−18.98	1 40.7
27	6 37 43.75	6.994	24 21 8.0	6.05	2 16.6	27	8 2 42.12	6.679	21 40 52.9	19.36	1 39.4
28	6 40 31.53	6.987	24 18 37.2	6.52	2 15.5	28	8 5 22.24	6.666	21 33 3.5	19.74	1 38.1
29	6 43 19.13	6.980	24 15 55.3	6.98	2 14.3	29	8 8 2.05	6.653	21 25 5.0	20.12	1 36.8
30	6 46 6.54	6.972	24 13 2.3	7.44	2 13.2	30	8 10 41.55	6.640	21 16 57.4	20.50	1 35.5
31	6 48 53.78	+6.964	+24 9 58.2	−7.90	2 12.0	31	8 13 20.76	+6.627	+21 8 40.9	−20.87	1 34.2
32	6 51 40.83	+6.956	+24 6 43.1	−8.36	2 10.9	32	8 15 59.64	+6.614	+21 0 15.6	−21.24	1 32.9

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	2″.2	2″.2	2″.1	2″.1	2″.1	2″.1	Semidiameter	2″.1	2″.1	2″.0	2″.0	2″.0	2″.0
Hor. Parallax . .	4.0	3.9	3.9	3.8	3.8	3.7	Hor. Parallax	3.7	3.6	3.6	3.5	3.5	3.5

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	8 13 20.76	+6.627	+21 8 40.9	−20.87	1 34.2
2	8 15 59.64	6.614	21 0 15.6	21.24	1 32.9
3	8 18 38.21	6.601	20 51 41.4	21.61	1 31.6
4	8 21 16.48	6.588	20 42 58.4	21.97	1 30.3
5	8 23 54.45	6.575	20 34 6.8	22.33	1 29.0
6	8 26 32.10	+6.562	+20 25 6.7	−22.68	1 27.7
7	8 29 9.45	6.549	20 15 58.0	23.03	1 26.4
8	8 31 46.49	6.536	20 6 41.0	23.38	1 25.1
9	8 34 23.22	6.524	19 57 15.6	23.73	1 23.7
10	8 36 59.65	6.511	19 47 42.0	24.07	1 22.4
11	8 39 35.77	+6.498	+19 38 0.2	−24.40	1 21.0
12	8 42 11.57	6.485	19 28 10.4	24.73	1 19.7
13	8 44 47.06	6.472	19 18 12.6	25.06	1 18.3
14	8 47 22.24	6.459	19 8 6.9	25.39	1 17.0
15	8 49 57.10	6.446	18 57 53.5	25.72	1 15.6
16	8 52 31.66	+6.433	+18 47 32.3	−26.03	1 14.3
17	8 55 5.90	6.420	18 37 3.6	26.34	1 12.9
18	8 57 39.82	6.407	18 26 27.4	26.65	1 11.5
19	9 0 13.43	6.394	18 15 43.8	26.96	1 10.1
20	9 2 46.72	6.381	18 4 52.9	27.27	1 8.7
21	9 5 19.71	+6.368	+17 53 54.8	−27.56	1 7.3
22	9 7 52.37	6.355	17 42 49.6	27.85	1 5.9
23	9 10 24.73	6.342	17 31 37.4	28.14	1 4.5
24	9 12 56.78	6.329	17 20 18.3	28.43	1 3.1
25	9 15 28.53	6.317	17 8 52.4	28.72	1 1.7
26	9 17 59.98	+6.304	+16 57 19.8	−29.00	1 0.3
27	9 20 31.12	6.292	16 45 40.5	29.28	0 58.9
28	9 23 1.97	6.280	16 33 54.6	29.55	0 57.5
29	9 25 32.53	6.268	16 22 2.3	29.82	0 56.1
30	9 28 2.80	6.256	16 10 3.6	30.08	0 54.6
31	9 30 32.79	+6.244	+15 57 58.6	−30.34	0 53.1
32	9 33 2.51	+6.232	+15 45 47.3	−30.60	0 51.7

Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	2″.0	2″.0	1″.9	1″.9	1″.9	1″.9
Hor. Parallax . .	3.4	3.4	3.4	3.4	3.4	3.3

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	9 33 2.51	+6.232	+15 45 47.3	−30.60	0 51.7
2	9 35 31.96	6.221	15 33 29.9	30.85	0 50.2
3	9 38 1.13	6.210	15 21 6.4	31.10	0 48.8
4	9 40 30.04	6.199	15 8 37.0	31.35	0 47.3
5	9 42 58.69	6.188	14 56 1.7	31.59	0 45.9
6	9 45 27.09	+6.177	+14 43 20.5	−31.83	0 44.4
7	9 47 55.23	6.167	14 30 33.7	32.07	0 42.9
8	9 50 23.13	6.157	14 17 41.2	32.30	0 41.5
9	9 52 50.78	6.147	14 4 43.1	32.53	0 40.0
10	9 55 18.18	6.137	13 51 39.7	32.75	0 38.5
11	9 57 45.34	+6.127	+13 38 30.9	−32.97	0 37.0
12	10 0 12.27	6.117	13 25 16.9	33.19	0 35.5
13	10 2 38.96	6.107	13 11 57.7	33.40	0 34.0
14	10 5 5.42	6.097	12 58 33.5	33.61	0 32.5
15	10 7 31.65	6.088	12 45 4.3	33.81	0 31.0
16	10 9 57.65	+6.079	+12 31 30.4	−34.01	0 29.5
17	10 12 23.42	6.070	12 17 51.7	34.21	0 28.0
18	10 14 48.98	6.061	12 4 8.3	34.40	0 26.5
19	10 17 14.33	6.052	11 50 20.4	34.59	0 25.0
20	10 19 39.46	6.043	11 36 28.1	34.77	0 23.5
21	10 22 4.38	+6.034	+11 22 31.4	−34.95	0 22.0
22	10 24 29.10	6.026	11 8 30.5	35.13	0 20.4
23	10 26 53.63	6.018	10 54 25.4	35.30	0 18.9
24	10 29 17.98	6.010	10 40 16.2	35.47	0 17.3
25	10 31 42.14	6.003	10 26 3.0	35.63	0 15.8
26	10 34 6.12	+5.996	+10 11 45.9	−35.79	0 14.3
27	10 36 29.93	5.989	9 57 24.9	35.95	0 12.7
28	10 38 53.58	5.982	9 43 0.1	36.11	0 11.2
29	10 41 17.07	5.976	9 28 31.7	36.26	0 9.6
30	10 43 40.42	5.970	9 13 59.7	36.41	0 8.1
31	10 46 3.62	+5.964	+ 8 59 24.2	−36.55	0 6.5
32	10 48 26.68	+5.958	+ 8 44 45.2	−36.69	0 5.0

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . .	1″.9	1″.9	1″.9	1″.9	1″.9	1″.9
Hor. Parallax . .	3.3	3.3	3.3	3.3	3.3	3.3

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	10 48 26.68	+5.958	+8 44 45.2	−36.69	0 5.0	1	11 59 22.52	+5.902	+1 6 11.2	−39.15	23 16.0
2	10 50 49.62	5.953	8 30 2.8	36.83	0 3.4	2	12 1 44.17	5.904	0 50 31.0	39.18	23 14.5
3	10 53 12.43	5.948	8 15 17.1	36.97	0 1.8	3	12 4 5.88	5.906	0 34 50.3	39.20	23 12.9
4	10 55 35.13	5.943	8 0 28.3	37.10	0 0.3 23 58.7	4	12 6 27.66	5.909	0 19 9.2	39.22	23 11.3
5	10 57 57.72	5.938	7 45 36.3	37.23	23 57.2	5	12 8 49.52	5.912	+0 3 27.6	39.23	23 9.7
6	11 0 20.19	+5.934	+7 30 41.4	−37.35	23 55.6	6	12 11 11.45	+5.915	−0 12 14.2	−39.24	23 8.1
7	11 2 42.57	5.930	7 15 43.5	37.47	23 54.0	7	12 13 33.47	5.919	0 27 56.2	39.25	23 6.6
8	11 5 4.85	5.926	7 0 42.8	37.59	23 52.4	8	12 15 55.58	5.923	0 43 38.3	39.25	23 5.0
9	11 7 27.03	5.922	6 45 39.4	37.70	23 50.8	9	12 18 17.78	5.927	0 59 20.3	39.24	23 3.5
10	11 9 49.13	5.918	6 30 33.3	37.80	23 49.3	10	12 20 40.07	5.931	1 15 2.1	39.23	23 1.9
11	11 12 11.15	+5.915	+6 15 24.8	−37.90	23 47.7	11	12 23 2.47	+5.935	−1 30 43.7	−39.22	23 0.4
12	11 14 33.09	5.912	6 0 13.8	38.00	23 46.1	12	12 25 24.98	5.940	1 46 25.0	39.21	22 58.8
13	11 16 54.95	5.909	5 45 0.5	38.10	23 44.5	13	12 27 47.60	5.945	2 2 5.7	39.19	22 57.2
14	11 19 16.74	5.906	5 29 45.0	38.19	23 42.9	14	12 30 10.33	5.950	2 17 45.9	39.16	22 55.7
15	11 21 38.46	5.904	5 14 27.4	38.28	23 41.3	15	12 32 33.20	5.955	2 33 25.3	39.13	22 54.1
16	11 24 0.13	+5.902	+4 59 7.8	−38.36	23 39.8	16	12 34 56.20	+5.961	−2 49 4.0	−39.09	22 52.6
17	11 26 21.74	5.900	4 43 46.2	38.44	23 38.2	17	12 37 19.35	5.967	3 4 41.8	39.05	22 51.0
18	11 28 43.30	5.898	4 28 22.8	38.51	23 36.6	18	12 39 42.63	5.973	3 20 18.7	39.01	22 49.4
19	11 31 4.83	5.897	4 12 57.6	38.58	23 35.0	19	12 42 6.07	5.980	3 35 54.4	38.96	22 47.8
20	11 33 26.32	5.896	3 57 30.9	38.65	23 33.4	20	12 44 29.66	5.987	3 51 29.0	38.91	22 46.3
21	11 35 47.79	+5.895	+3 42 2.5	−38.71	23 31.8	21	12 46 53.41	+5.994	−4 7 2.3	−38.86	22 44.7
22	11 38 9.24	5.894	3 26 32.7	38.77	23 30.3	22	12 49 17.33	6.001	4 22 34.3	38.80	22 43.2
23	11 40 30.67	5.893	3 11 1.5	38.83	23 28.7	23	12 51 41.44	6.008	4 38 4.8	38.74	22 41.6
24	11 42 52.09	5.893	2 55 29.0	38.88	23 27.1	24	12 54 5.73	6.016	4 53 33.8	38.67	22 40.1
25	11 45 13.51	5.894	2 39 55.2	38.93	23 25.5	25	12 56 30.22	6.024	5 9 1.1	38.60	22 38.6
26	11 47 34.94	+5.894	+2 24 20.3	−38.98	23 23.9	26	12 58 54.91	+6.033	−5 24 26.8	−38.53	22 37.1
27	11 49 56.39	5.895	2 8 44.3	39.02	23 22.4	27	13 1 19.81	6.042	5 39 50.6	38.45	22 35.6
28	11 52 17.87	5.896	1 53 7.3	39.06	23 20.8	28	13 3 44.94	6.051	5 55 12.6	38.37	22 34.1
29	11 54 39.38	5.898	1 37 29.4	39.09	23 19.2	29	13 6 10.28	6.061	6 10 32.6	38.28	22 32.6
30	11 57 0.93	5.900	1 21 50.7	39.12	23 17.6	30	13 8 35.86	6.071	6 25 50.5	38.19	22 31.1
31	11 59 22.52	+5.902	+1 6 11.2	−39.15	23 16.0	31	13 11 1.68	+6.081	−6 41 6.2	−38.10	22 29.6
32	12 1 44.17	+5.904	+0 50 31.0	−39.18	23 14.5	32	13 13 27.74	+6.091	−6 56 19.6	−38.01	22 28.1

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter . .	1″.9	1″.9	1″.9	1″.9	1″.9	1″.9	Semidiameter . . .	1″.9	1″.9	1″.9	1″.9	2″.0	2″.0
Hor. Parallax . .	3.3	3.3	3.3	3.3	3.3	3.3	Hor. Parallax . . .	3.4	3.4	3.4	3.4	3.5	3.5

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	13 13 27.74	+6.091	− 6 56 19.6	−38.01	22 28.1	1	14 28 48.02	+6.498	−14 5 47.3	−32.86	21 45.3
2	13 15 54.06	6.102	7 11 30.6	37.91	22 26.6	2	14 31 24.17	6.515	14 18 53.2	32.62	21 43.9
3	13 18 20.63	6.113	7 26 39.1	37.80	22 25.1	3	14 34 0.73	6.532	14 31 53.3	32.37	21 42.6
4	13 20 47.46	6.124	7 41 45.0	37.69	22 23.6	4	14 36 37.69	6.549	14 44 47.2	32.11	21 41.3
5	13 23 14.56	6.135	7 56 48.1	37.57	22 22.1	5	14 39 15.06	6.566	14 57 35.0	31.85	21 40.0
6	13 25 41.93	+6.146	− 8 11 48.3	−37.45	22 20.6	6	14 41 52.83	+6.583	−15 10 16.5	−31.59	21 38.7
7	13 28 9.58	6.158	8 26 45.6	37.33	22 19.1	7	14 44 31.02	6.600	15 22 51.4	31.32	21 37.4
8	13 30 37.50	6.170	8 41 39.8	37.20	22 17.6	8	14 47 9.62	6.617	15 35 19.8	31.04	21 36.1
9	13 33 5.71	6.182	8 56 30.8	37.06	22 16.2	9	14 49 48.62	6.634	15 47 41.5	30.76	21 34.8
10	13 35 34.20	6.194	9 11 18.4	36.92	22 14.7	10	14 52 28.05	6.651	15 59 56.4	30.47	21 33.5
11	13 38 2.99	+6.206	− 9 26 2.5	−36.78	22 13.3	11	14 55 7.88	+6.668	−16 12 4.2	−30.18	21 32.3
12	13 40 32.07	6.218	9 40 43.1	36.63	22 11.8	12	14 57 48.13	6.686	16 24 5.0	29.88	21 31.0
13	13 43 1.45	6.231	9 55 19.9	36.47	22 10.4	13	15 0 26.80	6.703	16 35 58.6	29.58	21 29.7
14	13 45 31.13	6.244	10 9 52.9	36.30	22 9.0	14	15 3 9.88	6.720	16 47 44.8	29.27	21 28.5
15	13 48 1.13	6.257	10 24 22.0	36.13	22 7.5	15	15 5 51.39	6.738	16 59 23.6	28.96	21 27.2
16	13 50 31.44	+6.270	−10 38 47.1	−35.96	22 6.1	16	15 8 33.32	+6.755	−17 10 54.8	−28.64	21 26.0
17	13 53 2.07	6.283	10 53 8.0	35.78	22 4.6	17	15 11 15.66	6.773	17 22 18.3	28.32	21 24.8
18	13 55 33.03	6.297	11 7 24.7	35.60	22 3.2	18	15 13 58.43	6.791	17 33 34.0	27.99	21 23.6
19	13 58 4.32	6.311	11 21 37.0	35.42	22 1.8	19	15 16 41.64	6.809	17 44 41.8	27.66	21 22.4
20	14 0 35.95	6.325	11 35 44.9	35.23	22 0.4	20	15 19 25.28	6.827	17 55 41.7	27.32	21 21.2
21	14 3 7.93	+6.340	−11 49 48.2	−35.04	21 59.0	21	15 22 9.35	+6.845	−18 6 33.4	−26.98	21 20.0
22	14 5 40.26	6.355	12 3 46.9	34.85	21 57.6	22	15 24 53.85	6.864	18 17 16.9	26.64	21 18.8
23	14 8 12.94	6.370	12 17 40.8	34.65	21 56.2	23	15 27 38.80	6.882	18 27 52.0	26.29	21 17.6
24	14 10 45.99	6.385	12 31 29.8	34.44	21 54.8	24	15 30 24.18	6.900	18 38 18.6	25.93	21 16.4
25	14 13 19.42	6.400	12 45 13.8	34.23	21 53.4	25	15 33 10.00	6.919	18 48 36.7	25.57	21 15.2
26	14 15 53.21	+6.416	−12 58 52.8	−34.02	21 52.1	26	15 35 56.27	+6.937	−18 58 46.1	−25.21	21 14.1
27	14 18 27.39	6.432	13 12 26.5	33.80	21 50.7	27	15 38 42.98	6.955	19 8 46.7	24.84	21 12.9
28	14 21 1.96	6.448	13 25 55.0	33.57	21 49.3	28	15 41 30.13	6.973	19 18 38.4	24.46	21 11.8
29	14 23 36.92	6.464	13 39 18.0	33.34	21 48.0	29	15 44 17.72	6.992	19 28 21.0	24.08	21 10.6
30	14 26 12.27	6.481	13 52 35.5	33.10	21 46.6	30	15 47 5.75	7.010	19 37 54.5	23.70	21 9.5
31	14 28 48.02	+6.498	−14 5 47.3	−32.86	21 45.3	31	15 49 54.22	+7.028	−19 47 18.6	−23.31	21 8.4
32	14 31 24.17	+6.515	−14 18 53.2	−32.62	21 43.9	32	15 52 43.12	+7.046	−19 56 33.4	−22.92	21 7.2

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter. .	2″.0	2″.0	2″.0	2″.0	2″.1	2″.1
Hor. Parallax . .	3.5	3.5	3.5	3.6	3.6	3.7

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	2″.1	2″.1	2″.2	2″.2	2″.3	2″.3	2″.3
Hor. Parallax . .	3.7	3.8	3.8	3.9	3.9	4.0	4.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	1 0 29.17	+0.691	+5 3 32.7	+5.11	6 14.1	1	1 14 6.81	+1.462	+6 36 20.3	+ 9.51	4 25.8
2	1 0 46.11	0.720	5 5 37.3	5.28	6 10.4	2	1 14 42.12	1.482	6 40 9.7	9.62	4 22.5
3	1 1 3.74	0.749	5 7 46.1	5.45	6 6.8	3	1 15 17.92	1.502	6 44 1.7	9.72	4 19.1
4	1 1 22.05	0.779	5 9 59.0	5.62	6 3.2	4	1 15 54.19	1.522	6 47 56.2	9.82	4 15.8
5	1 1 41.03	0.805	5 12 15.9	5.79	5 59.6	5	1 16 30.93	1.541	6 51 53.1	9.92	4 12.5
6	1 2 0.69	+0.833	+5 14 36.7	+5.96	5 56.0	6	1 17 8.13	+1.560	+6 55 52.3	+10.02	4 9.2
7	1 2 21.01	0.860	5 17 1.5	6.12	5 52.4	7	1 17 45.78	1.579	6 59 53.9	10.12	4 5.9
8	1 2 41.99	0.888	5 19 30.2	6.28	5 48.8	8	1 18 23.90	1.598	7 3 57.7	10.21	4 2.6
9	1 3 3.62	0.915	5 22 2.7	6.44	5 45.2	9	1 19 2.45	1.616	7 8 3.7	10.30	3 59.3
10	1 3 25.90	0.942	5 24 39.1	6.59	5 41.7	10	1 19 41.45	1.634	7 12 11.9	10.39	3 56.0
11	1 3 48.83	+0.969	+5 27 19.2	+6.75	5 38.1	11	1 20 20.88	+1.652	+7 16 22.2	+10.48	3 52.7
12	1 4 12.38	0.995	5 30 2.9	6.90	5 34.6	12	1 21 0.73	1.669	7 20 34.7	10.56	3 49.4
13	1 4 36.57	1.021	5 32 50.5	7.06	5 31.0	13	1 21 41.01	1.687	7 24 49.2	10.64	3 46.1
14	1 5 1.39	1.047	5 35 41.7	7.20	5 27.5	14	1 22 21.69	1.704	7 29 5.6	10.72	3 42.9
15	1 5 26.82	1.073	5 38 36.4	7.35	5 24.0	15	1 23 2.79	1.721	7 33 24.0	10.80	3 39.7
16	1 5 52.86	+1.098	+5 41 34.6	+7.50	5 20.5	16	1 23 44.28	+1.737	+7 37 44.2	+10.88	3 36.4
17	1 6 19.51	1.123	5 44 36.3	7.64	5 17.0	17	1 24 26.17	1.753	7 42 6.2	10.96	3 33.2
18	1 6 46.76	1.148	5 47 41.5	7.78	5 13.5	18	1 25 8.45	1.769	7 46 30.0	11.03	3 30.0
19	1 7 14.60	1.172	5 50 50.0	7.92	5 10.1	19	1 25 51.11	1.785	7 50 55.5	11.10	3 26.8
20	1 7 43.02	1.196	5 54 1.8	8.06	5 6.6	20	1 26 34.13	1.801	7 55 22.7	11.17	3 23.5
21	1 8 12.02	+1.220	+5 57 16.9	+8.20	5 3.2	21	1 27 17.53	+1.816	+7 59 51.5	+11.23	3 20.3
22	1 8 41.58	1.243	6 0 35.2	8.33	4 59.7	22	1 28 1.28	1,831	8 4 21.8	11.29	3 17.1
23	1 9 11.71	1.266	6 3 56.6	8.46	4 56.3	23	1 28 45.39	1.845	8 8 53.5	11.35	3 13.9
24	1 9 42.39	1.289	6 7 21.1	8.59	4 52.9	24	1 29 29.84	1.859	8 13 26.8	11.41	3 10.7
25	1 10 13.61	1.312	6 10 48.6	8.72	4 49.5	25	1 30 14.63	1.873	8 18 1.3	11.47	3 7.5
26	1 10 45.37	+1.334	+6 14 19.0	+8.84	4 46.0	26	1 30 59.75	+1.887	+8 22 37.2	+11.52	3 4.3
27	1 11 17.66	1.356	6 17 52.3	8.96	4 42.7	27	1 31 45.20	1.900	8 27 14.5	11.57	3 1.2
28	1 11 50.47	1.378	6 21 28.5	9.07	4 39.3	28	1 32 30.97	1.913	8 31 52.9	11.62	2 58.0
29	1 12 23.80	1.399	6 25 7.4	9.18	4 35.9	29	1 33 17.06	1.926	8 36 32.5	11.67	2 54.8
30	1 12 57.64	1.420	6 28 49.0	9.29	4 32.5	30	1 34 3.45	1.939	8 41 13.3	11.72	2 51.6
31	1 13 31.98	+1.441	+6 32 33.3	+9.40	4 29.2	31	1 34 50.15	+1.952	+8 45 55.1	+11.77	2 48.5
32	1 14 6.81	+1.462	+6 36 20.3	+9.51	4 25.8	32	1 35 37.15	+1.965	+8 50 38.0	+11.81	2 45.3

Day of the Month.	2d.	10th.	18th.	26th.	Day of the Month.	3d.	11th.	19th.	27th.
Polar Semidiameter . .	19″.6	19″.1	18″.6	18″.2	Polar Semidiameter . .	17″.8	17″.4	17″.1	16″.8
Horizontal Parallax . .	1.8	1.8	1.7	1.7	Horizontal Parallax . .	1.7	1.6	1.6	1.6

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	1 33 17.06	+1.926	+ 8 36 32.5	+11.67	2 54.8
2	1 34 3.45	1.939	8 41 13.3	11.72	2 51.6
3	1 34 50.15	1.952	8 45 55.1	11.77	2 48.5
4	1 35 37.15	1.965	8 50 38.0	11.81	2 45.3
5	1 36 24.44	1.977	8 55 21.9	11.85	2 42.1
6	1 37 12.02	+1.989	+ 9 0 6.8	+11.89	2 39.0
7	1 37 59.88	2.001	9 4 52.7	11.93	2 35.9
8	1 38 48.03	2.012	9 9 39.4	11.97	2 32.7
9	1 39 36.45	2.023	9 14 27.0	12.01	2 29.6
10	1 40 25.14	2.034	9 19 15.4	12.04	2 26.5
11	1 41 14.09	+2.045	+ 9 24 4.6	+12.07	2 23.4
12	1 42 3.30	2.056	9 28 54.5	12.10	2 20.3
13	1 42 52.77	2.067	9 33 45.1	12.13	2 17.2
14	1 43 42.49	2.077	9 38 36.4	12.15	2 14.1
15	1 44 32.45	2.087	9 43 28.3	12.18	2 11.0
16	1 45 22.65	+2.097	+ 9 48 20.7	+12.20	2 7.9
17	1 46 13.09	2.106	9 53 13.7	12.22	2 4.8
18	1 47 3.75	2.115	9 58 7.1	12.24	2 1.7
19	1 47 54.63	2.124	10 3 1.0	12.26	1 58.6
20	1 48 45.73	2.133	10 7 55.2	12.27	1 55.5
21	1 49 37.04	+2.142	+10 12 49.8	+12.28	1 52.4
22	1 50 28.55	2.151	10 17 44.7	12.29	1 49.3
23	1 51 20.26	2.159	10 22 39.8	12.30	1 46.3
24	1 52 12.16	2.167	10 27 35.1	12.31	1 43.2
25	1 53 4.24	2.175	10 32 30.6	12.31	1 40.2
26	1 53 56.52	+2.182	+10 37 26.2	+12.32	1 37.1
27	1 54 48.97	2.189	10 42 21.9	12.32	1 34.1
28	1 55 41.59	2.196	10 47 17.6	12.32	1 31.1
29	1 56 34.38	2.203	10 52 13.3	12.32	1 28.0
30	1 57 27.34	2.210	10 57 9.0	12.32	1 24.9
31	1 58 20.46	+2.217	+11 2 4.6	+12.31	1 21.9
32	1 59 13.72	+2.223	+11 7 0.1	+12.31	1 18.8

Day of the Month.	7th.	15th.	23d.	31st.
Polar Semidiameter .	16″.5	16″.3	16″.1	16″.0
Horizontal Parallax .	1.6	1.5	1.5	1.5

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	1 59 13.72	+2.223	+11 7 0.1	+12.31	1 18.8
2	2 0 7.14	2.229	11 11 55.5	12.30	1 15.7
3	2 1 0.70	2.235	11 16 50.8	12.30	1 12.7
4	2 1 54.41	2.241	11 21 45.8	12.29	1 9.7
5	2 2 48.26	2.247	11 26 40.7	12.28	1 6.6
6	2 3 42.24	+2.252	+11 31 35.3	+12.27	1 3.6
7	2 4 36.35	2.257	11 36 29.6	12.26	1 0.5
8	2 5 30.59	2.262	11 41 23.6	12.25	0 57.5
9	2 6 24.95	2.267	11 46 17.3	12.23	0 54.5
10	2 7 19.43	2.272	11 51 10.6	12.21	0 51.4
11	2 8 14.02	+2.277	+11 56 3.5	+12.20	0 48.4
12	2 9 8.72	2.282	12 0 56.0	12.18	0 45.4
13	2 10 3.53	2.286	12 5 48.0	12.16	0 42.4
14	2 10 58.43	2.290	12 10 39.5	12.14	0 39.4
15	2 11 53.43	2.294	12 15 30.4	12.12	0 36.3
16	2 12 48.52	+2.297	+12 20 20.7	+12.09	0 33.3
17	2 13 43.69	2.301	12 25 10.5	12.06	0 30.3
18	2 14 38.93	2.304	12 29 59.5	12.03	0 27.3
19	2 15 34.25	2.307	12 34 47.9	12.00	0 24.3
20	2 16 29.64	2.310	12 39 35.6	11.97	0 21.3
21	2 17 25.09	+2.312	+12 44 22.5	+11.94	0 18.3
22	2 18 20.60	2.314	12 49 8.5	11.90	0 15.2
23	2 19 16.17	2.316	12 53 53.8	11.87	0 12.2
24	2 20 11.78	2.318	12 58 38.3	11.84	0 9.2
25	2 21 7.43	2.320	13 3 21.8	11.80	0 6.2
26	2 22 3.14	+2.322	+13 8 4.5	+11.76	0 3.2
27	2 22 58.87	2.323	13 12 46.2	11.72	0 0.2 23 57.2
28	2 23 54.63	2.324	13 17 27.0	11.68	23 54.2
29	2 24 50.43	2.325	13 22 6.8	11.64	23 51.2
30	2 25 46.25	2.326	13 26 45.6	11.60	23 48.2
31	2 26 42.09	+2.327	+13 31 23.4	+11.55	23 45.2
32	2 27 37.94	+2.327	+13 36 0.2	+11.51	23 42.2

Day of the Month.	8th.	16th.	24th.	32d.
Polar Semidiameter . .	15″.9	15″.8	15″.7	15″.7
Horizontal Parallax . .	1.5	1.5	1.5	1.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	2 26 42.09	+2.327	+13 31 23.4	+11.55	23 45.2	1	2 55 19.03	+2.256	+15 44 22.4	+9.75	22 11.8
2	2 27 37.94	2.327	13 36 0.2	11.51	23 42.2	2	2 56 13.11	2.251	15 48 15.5	9.68	22 8.7
3	2 28 33.81	2.328	13 40 35.9	11.47	23 39.1	3	2 57 7.06	2.245	15 52 6.9	9.61	22 5.7
4	2 29 29.69	2.328	13 45 10.5	11.42	23 36.1	4	2 58 0.87	2.239	15 55 56.6	9.54	22 2.6
5	2 30 25.57	2.328	13 49 44.0	11.38	23 33.1	5	2 58 54.54	2.233	15 59 44.6	9.47	21 59.6
6	2 31 21.45	+2.328	+13 54 16.3	+11.33	23 30.1	6	2 59 48.07	+2.227	+16 3 30.8	+9.39	21 56.5
7	2 32 17.33	2.328	13 58 47.6	11.28	23 27.1	7	3 0 41.45	2.221	16 7 15.3	9.32	21 53.5
8	2 33 13.21	2.328	14 3 17.6	11.23	23 24.1	8	3 1 34.66	2.214	16 10 58.0	9.25	21 50.4
9	2 34 9.07	2.327	14 7 46.5	11.18	23 21.1	9	3 2 27.71	2.207	16 14 38.8	9.17	21 47.4
10	2 35 4.92	2.327	14 12 14.1	11.13	23 18.1	10	3 3 20.59	2.200	16 18 17.9	9.10	21 44.3
11	2 36 0.74	+2.326	+14 16 40.5	+11.08	23 15.1	11	3 4 13.30	+2.192	+16 21 55.1	+9.02	21 41.3
12	2 36 56.54	2.325	14 21 5.6	11.02	23 12.1	12	3 5 5.82	2.184	16 25 30.5	8.94	21 38.2
13	2 37 52.31	2.323	14 25 29.4	10.96	23 9.1	13	3 5 58.15	2.176	16 29 4.0	8.86	21 35.1
14	2 38 48.04	2.321	14 29 51.9	10.91	23 6.1	14	3 6 50.29	2.168	16 32 35.6	8.78	21 32.0
15	2 39 43.73	2.319	14 34 13.0	10.85	23 3.1	15	3 7 42.23	2.160	16 36 5.3	8.70	21 29.0
16	2 40 39.37	+2.317	+14 38 32.7	+10.79	23 0.1	16	3 8 33.95	+2.151	+16 39 33.0	+8.62	21 25.9
17	2 41 34.96	2.315	14 42 51.0	10.73	22 57.1	17	3 9 25.47	2.142	16 42 58.8	8.54	21 22.8
18	2 42 30.49	2.313	14 47 7.9	10.67	22 54.1	18	3 10 16.77	2.133	16 46 22.7	8.45	21 19.7
19	2 43 25.95	2.310	14 51 23.3	10.61	22 51.0	19	3 11 7.84	2.123	16 49 44.6	8.37	21 16.7
20	2 44 21.35	2.307	14 55 37.2	10.55	22 48.0	20	3 11 58.67	2.113	16 53 4.5	8.29	21 13.6
21	2 45 16.67	+2.304	+14 59 49.6	+10.49	22 45.0	21	3 12 49.27	+2.103	+16 56 22.4	+8.21	21 10.5
22	2 46 11.92	2.300	15 4 0.6	10.42	22 42.0	22	3 13 39.63	2.093	16 59 38.3	8.13	21 7.4
23	2 47 7.08	2.297	15 8 10.0	10.36	22 38.9	23	3 14 29.74	2.083	17 2 52.3	8.04	21 4.3
24	2 48 2.15	2.293	15 12 17.8	10.30	22 35.9	24	3 15 19.59	2.072	17 6 4.2	7.95	21 1.2
25	2 48 57.13	2.289	15 16 24.0	10.23	22 32.9	25	3 16 9.18	2.061	17 9 14.1	7.87	20 58.1
26	2 49 52.01	+2.285	+15 20 28.7	+10.17	22 29.9	26	3 16 58.51	+2.050	+17 12 22.0	+7.79	20 54.9
27	2 50 46.79	2.281	15 24 31.7	10.10	22 26.9	27	3 17 47.57	2.038	17 15 27.8	7.70	20 51.8
28	2 51 41.47	2.276	15 28 33.1	10.03	22 23.8	28	3 18 36.36	2.027	17 18 31.7	7.62	20 48.7
29	2 52 36.03	2.271	15 32 32.9	9.96	22 20.8	29	3 19 24.86	2.015	17 21 33.4	7.53	20 45.6
30	2 53 30.48	2.266	15 36 31.1	9.89	22 17.8	30	3 20 13.08	2.003	17 24 33.1	7.45	20 42.4
31	2 54 24.82	+2.261	+15 40 27.6	+ 9.82	22 14.8	31	3 21 1.00	+1.991	+17 27 30.8	+7.37	20 39.3
32	2 55 19.03	+2.256	+15 44 22.4	+ 9.75	22 11.8	32	3 21 48.62	+1.978	+17 30 26.4	+7.28	20 36.2

Day of the Month.	2d.	10th.	18th.	26th.	Day of the Month.	3d.	11th.	19th.	27th.
Polar Semidiameter . .	15″.7	15″.8	15″.8	15″.9	Polar Semidiameter . .	16″.0	16″.2	16″.4	16″.6
Horizontal Parallax . .	1.5	1.5	1.5	1.5	Horizontal Parallax . .	1.5	1.5	1.5	1.6

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	3 21 1.00	+1.991	+17 27 30.8	+7.37	20 39.3	1	3 42 42.72	+1.460	+18 41 29.7	+4.53	18 58.8
2	3 21 48.62	1.978	17 30 26.4	7.28	20 36.2	2	3 43 17.50	1.438	18 43 17.4	4.44	18 55.4
3	3 22 35.94	1.965	17 33 19.9	7.19	20 33.0	3	3 43 51.76	1.416	18 45 2.8	4.34	18 52.0
4	3 23 22.95	1.952	17 36 11.4	7.10	20 29.8	4	3 44 25.47	1.393	18 46 46.0	4.25	18 48.7
5	3 24 9.64	1.939	17 39 0.8	7.01	20 26.7	5	3 44 58.63	1.370	18 48 26.9	4.16	18 45.3
6	3 24 56.01	+1.925	+17 41 48.0	+6.92	20 23.5	6	3 45 31.24	+1.347	+18 50 5.5	+4.06	18 41.9
7	3 25 42.04	1.911	17 44 33.1	6.83	20 20.3	7	3 46 3.28	1.323	18 51 41.9	3.97	18 38.5
8	3 26 27.73	1.897	17 47 16.1	6.75	20 17.1	8	3 46 34.74	1.299	18 53 15.9	3.87	18 35.0
9	3 27 13.07	1.882	17 49 57.0	6.66	20 13.9	9	3 47 5.62	1.274	18 54 47.6	3.78	18 31.6
10	3 27 58.06	1.867	17 52 35.8	6.57	20 10.7	10	3 47 35.91	1.249	18 56 17.0	3.68	18 28.2
11	3 28 42.68	+1.852	+17 55 12.3	+6.48	20 7.5	11	3 48 5.59	+1.224	+18 57 44.1	+3.58	18 24.7
12	3 29 26.93	1.837	17 57 46.7	6.39	20 4.3	12	3 48 34.66	1.198	18 59 8.9	3.49	18 21.3
13	3 30 10.80	1.821	18 0 18.9	6.30	20 1.1	13	3 49 3.12	1.172	19 0 31.3	3.39	18 17.8
14	3 30 54.29	1.804	18 2 48.9	6.20	19 57.9	14	3 49 30.95	1.146	19 1 51.5	3.29	18 14.3
15	3 31 37.38	1.787	18 5 16.7	6.11	19 54.7	15	3 49 58.14	1.120	19 3 9.3	3.20	18 10.8
16	3 32 20.07	+1.770	+18 7 42.3	+6.02	19 51.5	16	3 50 24.69	+1.093	+19 4 24.7	+3.10	18 7.3
17	3 33 2.35	1.753	18 10 5.7	5.93	19 48.3	17	3 50 50.59	1.066	19 5 37.9	3.00	18 3.8
18	3 33 44.21	1.735	18 12 26.9	5.84	19 45.1	18	3 51 15.84	1.038	19 6 48.7	2.91	18 0.3
19	3 34 25.65	1.717	18 14 45.9	5.75	19 41.8	19	3 51 40.42	1.010	19 7 57.2	2.81	17 56.8
20	3 35 6.66	1.699	18 17 2.6	5.65	19 38.5	20	3 52 4.33	0.982	19 9 3.4	2.71	17 53.2
21	3 35 47.23	+1.681	+18 19 17.1	+5.56	19 35.2	21	3 52 27.56	+0.954	+19 10 7.3	+2.62	17 49.7
22	3 36 27.36	1.662	18 21 29.4	5.47	19 31.9	22	3 52 50.12	0.926	19 11 8.8	2.52	17 46.1
23	3 37 7.04	1.643	18 23 39.5	5.37	19 28.7	23	3 53 11.98	0.897	19 12 8.1	2.42	17 42.5
24	3 37 46.26	1.624	18 25 47.3	5.28	19 25.4	24	3 53 33.15	0.868	19 13 5.0	2.33	17 38.9
25	3 38 25.01	1.605	18 27 52.9	5.18	19 22.1	25	3 53 53.62	0.838	19 13 59.6	2.23	17 35.4
26	3 39 3.29	+1.585	+18 29 56.3	+5.09	19 18.8	26	3 54 13.38	+0.808	+19 14 51.9	+2.13	17 31.7
27	3 39 41.10	1.565	18 31 57.5	5.00	19 15.5	27	3 54 32.42	0.778	19 15 41.8	2.04	17 28.1
28	3 40 18.43	1.545	18 33 56.4	4.90	19 12.1	28	3 54 50.74	0.748	19 16 29.5	1.94	17 24.5
29	3 40 55.25	1.524	18 35 53.1	4.81	19 8.8	29	3 55 8.32	0.717	19 17 14.8	1.84	17 20.8
30	3 41 31.59	1.503	18 37 47.5	4.72	19 5.5	30	3 55 25.17	0.686	19 17 57.8	1.75	17 17.1
31	3 42 7.41	+1.482	+18 39 39.7	+4.62	19 2.2	31	3 55 41.28	+0.655	+19 18 38.4	+1.65	17 13.5
32	3 42 42.72	+1.460	+18 41 29.7	+4.53	18 58.8	32	3 55 56.63	+0.624	+19 19 16.7	+1.55	17 9.8

Day of the Month.	5th.	13th.	21st.	29th.	Day of the Month.	6th.	14th.	22d.	30th.
Polar Semidiameter . .	16.9″	17.2″	17.6″	17.9″	Polar Semidiameter . .	18.3″	18.7″	19.2″	19.7″
Horizontal Parallax . .	1.6	1.6	1.6	1.7	Horizontal Parallax . .	1.7	1.8	1.8	1.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	3 55 56.63	+0.624	+19 19 16.7	+1.55	17 9.8
2	3 56 11.22	0.592	19 19 52.6	1.45	17 6.1
3	3 56 25.04	0.560	19 20 26.2	1.35	17 2.4
4	3 56 38.09	0.527	19 20 57.4	1.25	16 58.6
5	3 56 50.36	0.495	19 21 26.3	1.15	16 54.9
6	3 57 1.84	+0.462	+19 21 52.8	+1.05	16 51.2
7	3 57 12.53	0.429	19 22 16.9	0.95	16 47.4
8	3 57 22.42	0.396	19 22 38.6	0.86	16 43.6
9	3 57 31.50	0.363	19 22 57.9	0.76	16 39.8
10	3 57 39.77	0.328	19 23 14.8	0.66	16 36.0
11	3 57 47.23	+0.294	+19 23 29.4	+0.56	16 32.2
12	3 57 53.86	0.260	19 23 41.5	0.46	16 28.4
13	3 57 59.68	0.225	19 23 51.3	0.36	16 24.5
14	3 58 4.67	0.191	19 23 58.7	0.26	16 20.7
15	3 58 8.83	0.156	19 24 3.7	0.16	16 16.8
16	3 58 12.16	+0.121	+19 24 6.3	+0.06	16 12.9
17	3 58 14.66	0.087	19 24 6.5	−0.04	16 9.0
18	3 58 16.33	0.052	19 24 4.5	0.13	16 5.1
19	3 58 17.16	+0.017	19 24 0.1	0.23	16 1.2
20	3 58 17.16	−0.018	19 23 53.3	0.33	15 57.2
21	3 58 16.33	−0.052	+19 23 44.2	−0.43	15 53.3
22	3 58 14.66	0.087	19 23 32.7	0.53	15 49.3
23	3 58 12.17	0.122	19 23 18.9	0.62	15 45.3
24	3 58 8.83	0.157	19 23 2.7	0.72	15 41.3
25	3 58 4.66	0.191	19 22 44.2	0.82	15 37.3
26	3 57 59.65	−0.226	+19 22 23.4	−0.91	15 33.3
27	3 57 53.81	0.261	19 22 0.2	1.01	15 29.3
28	3 57 47.14	0.295	19 21 34.7	1.11	15 25.2
29	3 57 39.64	0.330	19 21 6.8	1.21	15 21.1
30	3 57 31.31	0.365	19 20 36.7	1.30	15 17.1
31	3 57 22.15	−0.399	+19 20 4.1	−1.40	15 13.0
32	3 57 12.17	−0.433	+19 19 29.3	−1.50	15 8.9

Day of the Month.	7th.	15th.	23d.
Polar Semidiameter	20.″2	20.″7	21.″2
Horizontal Parallax	1.9	1.9	2.0

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	3 57 22.15	−0.399	+19 20 4.1	−1.40	15 13.0
2	3 57 12.17	0.433	19 19 29.3	1.50	15 8.9
3	3 57 1.36	0.467	19 18 52.1	1.59	15 4.7
4	3 56 49.74	0.501	19 18 12.6	1.69	15 0.6
5	3 56 37.31	0.535	19 17 30.9	1.79	14 56.5
6	3 56 24.07	−0.569	+19 16 46.8	−1.89	14 52.3
7	3 56 10.02	0.603	19 16 0.4	1.98	14 48.1
8	3 55 55.18	0.636	19 15 11.8	2.08	14 44.0
9	3 55 39.56	0.668	19 14 20.9	2.17	14 39.8
10	3 55 23.15	0.699	19 13 27.8	2.26	14 35.5
11	3 55 5.99	−0.731	+19 12 32.5	−2.35	14 31.3
12	3 54 48.06	0.762	19 11 35.1	2.44	14 27.1
13	3 54 29.40	0.793	19 10 35.5	2.53	14 22.8
14	3 54 9.99	0.823	19 9 33.7	2.62	14 16.6
15	3 53 49.87	0.853	19 8 29.9	2.71	14 14.3
16	3 53 29.04	−0.882	+19 7 24.0	−2.79	14 10.0
17	3 53 7.52	0.910	19 6 16.0	2.88	14 5.7
18	3 52 45.31	0.938	19 5 6.1	2.96	14 1.4
19	3 52 22.45	0.966	19 3 54.2	3.04	13 57.1
20	3 51 58.93	0.993	19 2 40.4	3.12	13 52.8
21	3 51 34.79	−1.010	+19 1 24.7	−3.20	13 48.4
22	3 51 10.02	1.044	19 0 7.1	3.27	13 44.1
23	3 50 44.65	1.068	18 58 47.6	3.35	13 39.8
24	3 50 18.70	1.092	18 57 26.4	3.42	13 35.4
25	3 49 52.19	1.116	16 56 3.5	3.49	13 31.0
26	3 49 25.12	−1.139	+18 54 38.8	−3.56	13 26.6
27	3 48 57.52	1.161	18 53 12.5	3.63	13 22.2
28	3 48 29.40	1.182	18 51 44.5	3.70	13 17.8
29	3 48 0.79	1.202	18 50 15.0	3.77	13 13.4
30	3 47 31.69	1.221	18 48 43.9	3.83	13 9.0
31	3 47 2.14	−1.240	+18 47 11.3	−3.89	13 4.6
32	3 46 32.16	−1.258	+18 45 37.3	−3.95	13 0.2

Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter . .	21.″7	22.″2	22.″6	22.″9
Horizontal Parallax . .	2.0	2.1	2.1	2.2

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	3 46 32.16	−1.258	+18 45 37.3	−3.95	13 0.2	1	3 30 12.38	−1.303	+17 53 43.7	−4.18	10 45.9
2	3 46 1.76	1.275	18 44 1.9	4.01	12 55.7	2	3 29 41.26	1.289	17 52 4.0	4.13	10 41.5
3	3 45 30.97	1.291	18 42 25.2	4.06	12 51.3	3	3 29 10.50	1.274	17 50 25.6	4.08	10 37.0
4	3 44 59.81	1.306	18 40 47.3	4.11	12 46.9	4	3 28 40.13	1.258	17 48 48.4	4.02	10 32.6
5	3 44 28.30	1.320	18 39 8.1	4.16	12 42.3	5	3 28 10.17	1.240	17 47 12.6	3.96	10 28.2
6	3 43 56.48	−1.332	+18 37 28.0	−4.20	12 37.9	6	3 27 40.64	−1.221	+17 45 38.3	−3.90	10 23.8
7	3 43 24.35	1.344	18 35 46.7	4.24	12 33.4	7	3 27 11.56	1.201	17 44 5.6	3.83	10 19.3
8	3 42 51.95	1.355	18 34 4.5	4.28	12 28.9	8	3 26 42.95	1.181	17 42 34.6	3.76	10 14.9
9	3 42 19.31	1.365	18 32 21.4	4.31	12 24.4	9	3 26 14.86	1.160	17 41 5.3	3.68	10 10.6
10	3 41 46.45	1.374	18 30 37.6	4.34	12 19.9	10	3 25 47.28	1.138	17 39 37.9	3.60	10 6.2
11	3 41 13.40	−1.381	+18 28 53.1	−4.37	12 15.5	11	3 25 20.24	−1.115	+17 38 12.5	−3.52	10 1.8
12	3 40 40.18	1.387	18 27 7.9	4.39	12 11.0	12	3 24 53.75	1.091	17 36 49.0	3.43	9 57.4
13	3 40 6.82	1.392	18 25 22.2	4.41	12 6.5	13	3 24 27.84	1.066	17 35 27.6	3.34	9 53.1
14	3 39 33.35	1.396	18 23 36.0	4.43	12 2.0	14	3 24 2.53	1.041	17 34 8.4	3.25	9 48.7
15	3 38 59.80	1.399	18 21 49.4	4.45	11 57.5	15	3 23 37.83	1.016	17 32 51.5	3.16	9 44.4
16	3 38 26.10	−1.401	+18 20 2.5	−4.46	11 53.1	16	3 23 13.76	−0.990	+17 31 36.8	−3.06	9 40.1
17	3 37 52.55	1.402	18 18 15.5	4.47	11 48.6	17	3 22 50.34	0.963	17 30 24.5	2.96	9 35.8
18	3 37 18.90	1.402	18 16 28.4	4.47	11 44.1	18	3 22 27.57	0.935	17 29 14.6	2.86	9 31.6
19	3 36 45.27	1.401	18 14 41.2	4.46	11 39.6	19	3 22 5.47	0.907	17 28 7.2	2.76	9 27.2
20	3 36 11.69	1.398	18 12 54.0	4.46	11 35.1	20	3 21 44.05	0.878	17 27 2.4	2.65	9 22 9
21	3 35 38.18	−1.394	+18 11 7.0	−4.45	11 30.6	21	3 21 23.35	−0.849	+17 26 0.2	−2.54	9 18.6
22	3 35 4.76	1.390	18 9 20.3	4.44	11 26.1	22	3 21 3.31	0.819	17 25 0.6	2.43	9 14.4
23	3 34 31.47	1.385	18 7 33.8	4.43	11 21.6	23	3 20 44.02	0.789	17 24 3.7	2.32	9 10.1
24	3 33 58.32	1.378	18 5 47.7	4.41	11 17.2	24	3 20 25.45	0.758	17 23 9.6	2.20	9 5.9
25	3 33 25.34	1.370	18 4 2.2	4.39	11 12.7	25	3 20 7.63	0.727	17 22 18.2	2.08	9 1.7
26	3 32 52.56	−1.361	+18 2 17.2	−4.36	11 8.2	26	3 19 50.55	−0.696	+17 21 29.7	−1.96	8 57.5
27	3 32 19.99	1.352	18 0 32.8	4.33	11 3.7	27	3 19 34.22	0.664	17 20 44.0	1.84	8 53.3
28	3 31 47.66	1.342	17 58 49.2	4.30	10 59.3	28	3 19 18.66	0.632	17 20 1.3	1.72	8 49.1
29	3 31 15.60	1.330	17 57 6.4	4.26	10 54.8	29	3 19 3.88	0.600	17 19 21.6	1.60	8 44.9
30	3 30 43.83	1.317	17 55 24.5	4.22	10 50.4	30	3 18 49.88	0.567	17 18 44.8	1.47	8 40.7
31	3 30 12 38	−1.303	+17 53 43.7	−4.18	10 45.9	31	3 18 36.67	−0.534	+17 18 11.1	−1.34	8 36.6
32	3 29 41.26	−1.289	+17 52 4.0	−4.13	10 41.5	32	3 18 24.26	−0.500	+17 17 40.4	−1.21	8 32.4

Day of the Month.	2d.	10th.	18th.	26th.
Polar Semidiameter . .	23″.2	23″.3	23″.4	23″.3
Horizontal Parallax . .	2.2	2.2	2.2	2.2

Day of the Month.	4th.	12th.	20th.	28th.	36th.
Polar Semidiameter . .	23″.1	22″.8	22″.4	22″.0	21″.5
Horizontal Parallax . .	2.2	2.1	2.1	2.1	2.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	12 49 33.87	+0.342	−2 42 47.9	−1.41	18 1.3	1	12 50 40.13	−0.166	−2 40 15.7	+1.79	16 0.3
2	12 49 41.89	0.326	2 43 20.4	1.30	17 57.5	2	12 50 35.96	0.182	2 39 31.7	1.89	15 56.3
3	12 49 49.53	0.311	2 43 50.4	1.20	17 53.6	3	12 50 31.40	0.198	2 38 45.4	1 98	15 52.3
4	12 49 56.80	0.295	2 44 18.0	1.10	17 49.8	4	12 50 26.46	0.214	2 37 56.8	2.08	15 48.3
5	12 50 3.68	0.279	2 44 43.1	1.00	17 46.0	5	12 50 21.15	0.230	2 37 5.9	2.17	15 44.3
6	12 50 10.18	+0.263	−2 45 5.7	−0.90	17 42.2	6	12 50 15.46	−0.246	−2 36 12.9	+2.26	15 40.2
7	12 50 16.29	0.247	2 45 25.9	0.79	17 38.3	7	12 50 9.39	0.261	2 35 17.5	2.35	15 36.2
8	12 50 22.01	0.231	2 45 43.5	0.69	17 34.5	8	12 50 2.96	0.276	2 34 20.0	2.44	15 32.2
9	12 50 27.34	0.214	2 45 58.6	0.58	17 30.7	9	12 49 56.16	0.291	2 33 20 4	2.53	15 28.1
10	12 50 32.28	0.198	2 46 11.2	0.47	17 26.8	10	12 49 48.99	0.306	2 32 18.6	2.62	15 24.1
11	12 50 36.83	+0.182	−2 46 21.3	−0.37	17 22.9	11	12 49 41.46	−0.321	−2 31 14.6	+2.71	15 20.0
12	12 50 40.98	0.165	2 46 28.9	0.26	17 19.1	12	12 49 33.58	0.336	2 30 8.5	2.80	15 15.9
13	12 50 44.73	0.148	2 46 33.9	0.16	17 15.2	13	12 49 25.34	0.350	2 29 0.4	2.88	15 11.9
14	12 50 48.08	0.131	2 46 36.5	−0.05	17 11.3	14	12 49 16.75	0.365	2 27 50.3	2.96	15 7.8
15	12 50 51.03	0.115	2 46 36.4	+0.05	17 7.4	15	12 49 7.82	0.379	2 26 38.2	3.04	15 3.7
16	12 50 53.58	+0.099	−2 46 33.9	+0.16	17 3.5	16	12 48 58.55	−0.393	−2 25 24.1	+3.12	14 59.6
17	12 50 55.73	0.082	2 46 28.8	0.26	16 59.6	17	12 48 48.94	0.407	2 24 8.1	3.20	14 55.5
18	12 50 57.48	0.065	2 46 21.2	0.37	16 55.7	18	12 48 39.01	0.421	2 22 50.3	3.28	14 51.4
19	12 50 58.83	0.048	2 46 11.1	0.47	16 51.8	19	12 48 28.76	0.434	2 21 30.6	3.36	14 47.3
20	12 50 59.77	0.031	2 45 58.4	0.58	16 47.9	20	12 48 18.18	0.447	2 20 9.1	3.43	14 43.2
21	12 51 0.31	+0.014	−2 45 43.3	+0.68	16 44.0	21	12 48 7.30	−0.460	−2 18 45.9	+3.50	14 39.1
22	12 51 0.46	−0.003	2 45 25.7	0.79	16 40.0	22	12 47 56.11	0.473	2 17 21.0	3.57	14 35.0
23	12 51 0.20	0.020	2 45 5.6	0.89	16 36.1	23	12 47 44.62	0.485	2 15 54.4	3.64	14 30.8
24	12 50 59.54	0.036	2 44 43.0	0.99	16 32.1	24	12 47 32.84	0.497	2 14 26.1	3.71	14 26.7
25	12 50 58.49	0.053	2 44 18.0	1.09	16 28.2	25	12 47 20.77	0.509	2 12 56.5	3.77	14 22.6
26	12 50 57.04	−0.070	−2 43 50.5	+1.19	16 24.2	26	12 47 8.43	−0.520	−2 11 25.3	+3.83	14 18.4
27	12 50 55.20	0.086	2 43 20.6	1.29	16 20.3	27	12 46 55.81	0.531	2 9 52.5	3.89	14 14.3
28	12 50 52.97	0.102	2 42 48.4	1.39	16 16.3	28	12 46 42.92	0.542	2 8 18.4	3.95	14 10.1
29	12 50 50.34	0.118	2 42 13.7	1.49	16 12.3	29	12 46 29.78	0.553	2 6 42.9	4.01	14 6.0
30	12 50 47.32	0.134	2 41 36.7	1.59	16 8.3	30	12 46 16.38	0.563	2 5 6.1	4.06	14 1.8
31	12 50 43.92	−0.150	−2 40 57.4	+1.69	16 4.3	31	12 46 2.75	−0.573	−2 3 28.0	+4.11	13 57.7
32	12 50 40.13	−0.166	−2 40 15.7	+1.79	16 0.3	32	12 45 48.87	−0.583	−2 1 48.6	+4.16	13 53.5

Day of the Month.	2d.	10th.	18th.	26th.	Day of the Month.	3d.	11th.	19th.	27th.
Polar Semidiameter . .	8″.2	8″.3	8″.4	8″.6	Polar Semidiameter . .	8″.7	8″.8	8″.9	9″.0
Horizontal Parallax . .	0.9	0.9	1.0	1.0	Horizontal Parallax . .	1.0	1.0	1.0	1.0

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	12 46 29.78	−0.553	−2 6 42.9	+4.01	14 6.0
2	12 46 16.38	0.563	2 5 6.1	4.06	14 1.8
3	12 46 2.75	0.573	2 3 28.0	4.11	13 57.7
4	12 45 48.87	0.583	2 1 48.6	4.16	13 53.5
5	12 45 34.76	0.593	2 0 8.1	4.21	13 49.3
6	12 45 20.42	−0.603	−1 58 26.5	+4.26	13 45.2
7	12 45 5.87	0.611	1 56 43.7	4.30	13 41.0
8	12 44 51.11	0.619	1 54 59.9	4.34	13 36.8
9	12 44 36.14	0.627	1 53 15.2	4.38	13 32.6
10	12 44 20.98	0.635	1 51 29.5	4.42	13 28.5
11	12 44 5.64	−0.643	−1 49 43.0	+4.46	13 24.3
12	12 43 50.12	0.650	1 47 55.5	4.49	13 20.1
13	12 43 34.43	0.657	1 46 7.4	4.52	13 15.9
14	12 43 18.58	0.664	1 44 18.6	4.55	13 11.7
15	12 43 2.58	0.670	1 42 29.1	4.58	13 7.5
16	12 42 46.43	−0.676	−1 40 39.0	+4.60	13 3.3
17	12 42 30.15	0.681	1 38 48.5	4.62	12 59.1
18	12 42 13.74	0.686	1 36 57.5	4.64	12 54.9
19	12 41 57.21	0.691	1 35 6.0	4.65	12 50.7
20	12 41 40.59	0.695	1 33 14.2	4.66	12 46.5
21	12 41 23.87	−0.698	−1 31 22.3	+4.66	12 42.3
22	12 41 7.06	0.701	1 29 30.1	4.67	12 38.1
23	12 40 50.18	0.704	1 27 37.7	4.67	12 33.8
24	12 40 33.23	0.707	1 25 45.3	4.68	12 29.6
25	12 40 16.23	0.709	1 23 52.9	4.68	12 25.4
26	12 39 59.17	−0.711	−1 22 0.5	+4.68	12 21.2
27	12 39 42.08	0.712	1 20 8.2	4.67	12 17.0
28	12 39 24.96	0.713	1 18 16.1	4.66	12 12.8
29	12 39 7.82	0.714	1 16 24.3	4.65	12 8.5
30	12 38 50.66	0.715	1 14 32.7	4.64	12 4.3
31	12 38 33.51	−0.715	−1 12 41.4	+4.62	12 0.1
32	12 38 16.36	−0.714	−1 10 50.6	+4.60	11 55.9

Day of the Month.	7th.	15th.	23d.	31st.
Polar Semidiameter .	9″.0	9″.1	9″.1	9″.1
Horizontal Parallax .	1.0	1.0	1.0	1.0

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	12 38 16.36	−0.714	−1 10 50.6	+4.60	11 55.9
2	12 37 59.23	0.713	1 9 0.2	4.58	11 51.7
3	12 37 42.12	0.712	1 7 10.3	4.56	11 47.5
4	12 37 25.04	0.711	1 5 21.0	4.54	11 43.2
5	12 37 8.00	0.709	1 3 32.2	4.51	11 39.0
6	12 36 51.01	−0.707	−1 1 44.2	+4.48	11 34.8
7	12 36 34.09	0.704	0 59 56.9	4.45	11 30.6
8	12 36 17.23	0.701	0 58 10.4	4.42	11 26.4
9	12 36 0.45	0.697	0 56 24.6	4.39	11 22.2
10	12 35 43.75	0.693	0 54 39.9	4.35	11 18.0
11	12 35 27.15	−0.688	−0 52 56.1	+4.31	11 13.8
12	12 35 10.65	0.683	0 51 13.2	4.27	11 9.6
13	12 34 54.27	6.678	0 49 31.4	4.22	11 5.4
14	12 34 38.01	0.673	0 47 50.8	4.17	11 1.2
15	12 34 21.88	0.667	0 46 11.3	4.12	10 57.0
16	12 34 5.89	−0.661	−0 44 33.1	+4.07	10 52.8
17	12 33 50.04	0.655	0 42 56.1	4.02	10 48.6
18	12 33 34.36	0.649	0 41 20.5	3.96	10 44.4
19	12 33 18.84	0.643	0 39 46.3	3.90	10 40.2
20	12 33 3.50	0.636	0 38 13.5	3.84	10 36.0
21	12 32 48.34	−0.628	−0 36 42.3	+3.78	10 31.8
22	12 32 33.37	0.620	0 35 12.6	3.71	10 27.7
23	12 32 18.59	0.612	0 33 44.5	3.64	10 23.5
24	12 32 4.02	0.603	0 32 17.9	3.57	10 19.3
25	12 31 49.66	0.594	0 30 53.0	3.50	10 15.1
26	12 31 35.52	−0.585	−0 29 29.9	+3.43	10 11.0
27	12 31 21.61	0.575	0 28 8.5	3.36	10 6.8
28	12 31 7.93	0.565	0 26 48.9	3.28	10 2.7
29	12 30 54.48	0.555	0 25 31.0	3.20	9 58.5
30	12 30 41.27	0.545	0 24 15.0	3.12	9 54.4
31	12 30 28.32	−0.535	−0 23 0.9	+3.04	9 50.2
32	12 30 15.61	−0.524	−0 21 48.7	+2.96	9 46.1

Day of the Month.	8th.	16th.	24th.	32d.
Polar Semidiameter . .	9″.1	9″.0	9″.0	8″.9
Horizontal Parallax . .	1.0	1.0	1.0	1.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 30 28.32	−0.535	−0 23 0.9	+3.04	9 50.2
2	12 30 15.61	0.524	0 21 48.7	2.96	9 46.1
3	12 30 3.17	0.513	0 20 38.4	2.88	9 42.0
4	12 29 51.00	0.502	0 19 30.1	2.80	9 37.8
5	12 29 39.10	0.490	0 18 23.8	2.72	9 33.7
6	12 29 27.47	−0.478	−0 17 19.4	+2.64	9 29.6
7	12 29 16.13	0.466	0 16 17.2	2.55	9 25.4
8	12 29 5.08	0.454	0 15 17.1	2.46	9 21.3
9	12 28 54.32	0.442	0 14 19.1	2.37	9 17.2
10	12 28 43.85	0.429	0 13 23.2	2.28	9 13.1
11	12 28 33.69	−0.416	−0 12 29.5	+2.19	9 9.0
12	12 28 23.84	0.403	0 11 38.0	2.10	9 4.9
13	12 28 14.30	0.390	0 10 48.8	2.01	9 0.8
14	12 28 5.08	0.377	0 10 1.8	1.91	8 56.7
15	12 27 56.19	0.364	0 9 17.1	1.82	8 52.7
16	12 27 47.62	−0.350	−0 8 34.7	+1.72	8 48.6
17	12 27 39.38	0.336	0 7 54.6	1.63	8 44.5
18	12 27 31.48	0.322	0 7 16.8	1.53	8 40.5
19	12 27 23.91	0.308	0 6 41.4	1.43	8 36.4
20	12 27 16.69	0.294	0 6 8.4	1.33	8 32.4
21	12 27 9.81	−0.280	−0 5 37.7	+1.23	8 28.3
22	12 27 3.27	0.266	0 5 9.5	1.13	8 24.3
23	12 26 57.09	0.251	0 4 43.6	1.03	8 20.2
24	12 26 51.26	0.236	0 4 20.2	0.93	8 16.2
25	12 26 45.78	0.221	0 3 59.2	0.83	8 12.2
26	12 26 40.65	−0.206	−0 3 40.6	+0.73	8 8.2
27	12 26 35.88	0.191	0 3 24.4	0.63	8 4.2
28	12 26 31.47	0.176	0 3 10.6	0.53	8 0.2
29	12 26 27.42	0.161	0 2 59.2	0.42	7 56.2
30	12 26 23.73	0.146	0 2 50.3	0.32	7 52.2
31	12 26 20.40	−0.131	−0 2 43.9	+0.21	7 48.2
32	12 26 17.44	−0.116	−0 2 39.8	+0.11	7 44.2

Day of the Month.	2d.	10th.	18th.	26th.
Polar Semidiameter . .	8″.9	8″.8	8″.7	8″.6
Horizontal Parallax . .	1.0	1.0	1.0	1.0

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 26 17.44	−0.116	−0 2 39.8	+0.11	7 44.2
2	12 26 14.84	0.101	0 2 38.2	+0.01	7 40.3
3	12 26 12.60	0.086	0 2 39.0	−0.09	7 36.3
4	12 26 10.73	0.071	0 2 42.3	0.19	7 32.3
5	12 26 9.23	0.056	0 2 48.0	0.29	7 28.4
6	12 26 8.09	−0.041	−0 2 56.1	−0.39	7 24.4
7	12 26 7.32	0.025	0 3 6.7	0.49	7 20.5
8	12 26 6.92	−0.009	0 3 19.7	0.59	7 16.6
9	12 26 6.90	+0.006	0 3 35.2	0.70	7 12.6
10	12 26 7.25	0.022	0 3 53.1	0.80	7 8.7
11	12 26 7.96	+0.038	−0 4 13.4	−0.90	7 4.8
12	12 26 9.05	0.053	0 4 36.2	1.00	7 0.9
13	12 26 10.51	0.069	0 5 1.4	1.10	6 57.0
14	12 26 12.34	0.085	0 5 29.0	1.20	6 53.1
15	12 26 14.55	0.100	0 5 59.0	1.30	6 49.2
16	12 26 17.12	+0.116	−0 6 31.5	−1.40	6 45.3
17	12 26 20.07	0.131	0 7 6.3	1.50	6 41.4
18	12 26 23.38	0.146	0 7 43.6	1.60	6 37.5
19	12 26 27.06	0.162	0 8 23.2	1.70	6 33.6
20	12 26 31.11	0.177	0 9 5.1	1.80	6 29.8
21	12 26 35.53	+0.192	−0 9 49.4	−1.90	6 25.9
22	12 26 40.31	0.207	0 10 36.0	2.00	6 22.1
23	12 26 45.45	0.222	0 11 25.0	2.09	6 18.2
24	12 26 50.95	0.238	0 12 16.2	2.19	6 14.4
25	12 26 56.81	0.253	0 13 9.7	2.28	6 10.6
26	12 27 3.03	+0.268	−0 14 5.5	−2.38	6 6.7
27	12 27 9.60	0.283	0 15 3.5	2.47	6 2.9
28	12 27 16.52	0.298	0 16 3.7	2.56	5 59.1
29	12 27 23.79	0.312	0 17 6.1	2.65	5 55.3
30	12 27 31.42	0.326	0 18 10.8	2.74	5 51.5
31	12 27 39.39	+0.340	−0 19 17.6	−2.83	5 47.7
32	12 27 47.71	+0.354	−0 20 26.5	−2.92	5 43.9

Day of the Month.	3d.	11th.	19th.	27th.
Polar Semidiameter . .	8″.5	8″.4	8″.3	8″.2
Horizontal Parallax . .	1.0	1.0	0.9	0.9

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 27 39.39	+0.340	−0 19 17.6	−2.83	5 47.7
2	12 27 47.71	0.354	0 20 26.5	2.92	5 43.9
3	12 27 56.37	0.368	0 21 37.6	3.01	5 40.1
4	12 28 5.37	0.382	0 22 50.8	3.10	5 36.3
5	12 28 14.71	0.396	0 24 6.2	3.18	5 32.6
6	12 28 24.39	+0.410	−0 25 23.6	−3.26	5 28.8
7	12 28 34.40	0.424	0 26 43.1	3.35	5 25.0
8	12 28 44.75	0.438	0 28 4.7	3.44	5 21.2
9	12 28 55.43	0.452	0 29 28.4	3.53	5 17.5
10	12 29 6.45	0.466	0 30 54.1	3.61	5 13.7
11	12 29 17.79	+0.480	−0 32 21.8	−3.70	5 10.0
12	12 29 29.46	0.493	0 33 51.4	3.78	5 6.2
13	12 29 41.45	0.506	0 35 23.1	3.86	5 2.5
14	12 29 53.77	0.520	0 36 56.8	3.94	4 58.7
15	12 30 6.40	0.533	0 38 32.3	4.02	4 55.0
16	12 30 19.34	+0.546	−0 40 9.8	−4.10	4 51.3
17	12 30 32.60	0.559	0 41 49.2	4.18	4 47.6
18	12 30 46.17	0.572	0 43 30.4	4.26	4 43.9
19	12 31 0.04	0.585	0 45 13.4	4.34	4 40.2
20	12 31 14.21	0.597	0 46 58.3	4.41	4 36.5
21	12 31 28.69	+0.609	−0 48 44.9	−4.48	4 32.8
22	12 31 43.46	0.621	0 50 33.4	4.55	4 29.1
23	12 31 58.51	0.633	0 52 23.5	4.62	4 25.4
24	12 32 13.86	0.645	0 54 15.3	4.69	4 21.7
25	12 32 29.50	0.657	0 56 8.8	4.76	4 18.1
26	12 32 45.41	+0.669	−0 58 4.0	−4.83	4 14.4
27	12 33 1.61	0.681	1 0 0.8	4.90	4 10.8
28	12 33 18.08	0.692	1 1 59.2	4.97	4 7.1
29	12 33 34.82	0.703	1 3 59.2	5.04	4 3.5
30	12 33 51.84	0.714	1 6 0.8	5.11	3 59.8
31	12 34 9.12	+0.725	−1 8 3.9	−5.17	3 56.2
32	12 34 26.66	+0.736	−1 10 8.5	−5.23	3 52.5

Day of the Month.	5th.	13th.	21st.	29th.
Polar Semidiameter . .	8.″1	8.″0	7.″9	7.″8
Horizontal Parallax . .	0.9	0.9	0.9	0.9

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	12 34 26.66	+0.736	−1 10 8.5	−5.23	3 52.5
2	12 34 44.47	0.747	1 12 14.7	5.29	3 48.9
3	12 35 2.53	0.758	1 14 22.3	5.35	3 45.2
4	12 35 20.85	0.769	1 16 31.4	5.41	3 41.6
5	12 35 39.42	0.780	1 18 41.9	5.47	3 38.0
6	12 35 58.25	+0.790	−1 20 53.9	−5.53	3 34.4
7	12 36 17.32	0.800	1 23 7.2	5.58	3 30.8
8	12 36 36.63	0.810	1 25 21.9	5.64	3 27.2
9	12 36 56.18	0.820	1 27 38.0	5.70	3 23.6
10	12 37 15.97	0.830	1 29 55.3	5.76	3 20.0
11	12 37 35.99	+0.839	−1 32 14.0	−5.81	3 16.4
12	12 37 56.24	0.848	1 34 33.9	5.86	3 12.8
13	12 38 16.72	0.858	1 36 55.1	5.91	3 9.2
14	12 38 37.42	0.867	1 39 17.5	5.96	3 5.6
15	12 38 58.34	0.876	1 41 41.1	6.01	3 2.0
16	12 39 19.48	+0.885	−1 44 5.9	−6.06	2 58.4
17	12 39 40.82	0.894	1 46 31.7	6.10	2 54.8
18	12 40 2.37	0.903	1 48 58.7	6.15	2 51.3
19	12 40 24.12	0.911	1 51 26.7	6.19	2 47.7
20	12 40 46.07	0.919	1 53 55.8	6.23	2 44.2
21	12 41 8.22	+0.927	−1 56 25.9	−6.27	2 40.6
22	12 41 30.56	0.935	1 58 57.0	6.31	2 37.1
23	12 41 53.09	0.943	2 1 29.0	6.35	2 33.5
24	12 42 15.79	0.951	2 4 2.0	6.39	2 30.0
25	12 42 38.68	0.958	2 6 35.9	6.43	2 26.4
26	12 43 1.75	+0.965	−2 9 10.7	−6.47	2 22.9
27	12 43 24.99	0.972	2 11 46.3	6.50	2 19.3
28	12 43 48.40	0.979	2 14 22.7	6.54	2 15.8
29	12 44 11.97	0.986	2 17 0.0	6.58	2 12.2
30	12 44 35.72	0.993	2 19 38.1	6.61	2 8.7
31	12 44 59.62	+1.000	−2 22 17.0	−6.64	2 5.1
32	12 45 23.68	+1.006	−2 24 56.6	−6.67	2 1.6

Day of the Month.	6th.	14th.	22d.	30th.
Polar Semidiameter . .	7.″7	7.″6	7.″5	7.″5
Horizontal Parallax . .	0.9	0.9	0.9	0.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	12 45 23.68	+1.006	−2 24 56.6	−6.67	2 1.6
2	12 45 47.89	1.012	2 27 36.9	6.70	1 58.1
3	12 46 12.26	1.018	2 30 17.9	6.73	1 54.6
4	12 46 36.78	1.024	2 32 59.7	6.76	1 51.0
5	12 47 1.44	1.030	2 35 42.0	6.78	1 47.5
6	12 47 26.23	+1.036	−2 38 25.0	−6.80	1 44.0
7	12 47 51.16	1.042	2 41 8.6	6.83	1 40.5
8	12 48 16.22	1.047	2 43 52.8	6.85	1 36.9
9	12 48 41.41	1.052	2 46 37.5	6.87	1 33.4
10	12 49 6.72	1.057	2 49 22.7	6.89	1 29.9
11	12 49 32.16	+1.062	−2 52 8.5	−6.91	1 26.4
12	12 49 57.71	1.067	2 54 54.6	6.93	1 22.9
13	12 50 23.38	1.072	2 57 41.2	6.95	1 19.4
14	12 50 49.15	1.076	3 0 28.2	6.97	1 15.9
15	12 51 15.03	1.080	3 3 15.6	6.98	1 12.4
16	12 51 41.01	+1.084	−3 6 3.4	−6.99	1 8.9
17	12 52 7.08	1.088	3 8 51.4	7.00	1 5.4
18	12 52 33.25	1.092	3 11 39.7	7.01	1 1.9
19	12 52 59.50	1.096	3 14 28.3	7.02	0 58.4
20	12 53 25.84	1.099	3 17 17.1	7.03	0 54.9
21	12 53 52.26	+1.102	−3 20 6.1	−7.04	0 51.4
22	12 54 18.75	1.105	3 22 55.2	7.05	0 47.9
23	12 54 45.32	1.108	3 25 44.6	7.05	0 44.4
24	12 55 11.96	1.111	3 28 34.1	7.06	0 40.9
25	12 55 38.66	1.114	3 31 23.6	7.06	0 37.4
26	12 56 5.42	+1.116	−3 34 13.3	−7.07	0 33.9
27	12 56 32.23	1.119	3 37 3.1	7.07	0 30.5
28	12 56 59.11	1.121	3 39 52.9	7.07	0 27.0
29	12 57 26.03	1.123	3 42 42.6	7.07	0 23.5
30	12 57 53.00	1.125	3 45 32.4	7.07	0 20.0
31	12 58 20.02	+1.127	−3 48 22.1	−7.07	0 16.5
32	12 58 47.08	+1.129	−3 51 11.8	−7.06	0 13.0

Day of the Month.	7th.	15th.	23d.
Polar Semidiameter	7″.4	7″.4	7″.4
Horizontal Parallax	0.8	0.8	0.8

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	12 58 20.02	+1.127	−3 48 22.1	−7.07	0 16.5
2	12 58 47.08	1.129	3 51 11.8	7.06	0 13.0
3	12 59 14.18	1.130	3 54 1.4	7.06	0 9.5
4	12 59 41.30	1.131	3 56 50.9	7.06	0 6.0
5	13 0 8.46	1.132	3 59 40.3	7.05	0 2.6 23 59.1
6	13 0 35.65	+1.133	−4 2 29.5	−7.05	23 55.6
7	13 1 2.85	1.133	4 5 18.5	7.04	23 52.1
8	13 1 30.06	1.134	4 8 7.3	7.03	23 48.7
9	13 1 57.29	1.134	4 10 55.8	7.02	23 45.3
10	13 2 24.53	1.135	4 13 44.1	7.01	23 41.8
11	13 2 51.77	+1.135	−4 16 32.1	−6.99	23 38.3
12	13 3 19.01	1.134	4 19 19.7	6.98	23 34.8
13	13 3 46.24	1.134	4 22 6.9	6.97	23 31.3
14	13 4 13.46	1.133	4 24 53.8	6.95	23 27.8
15	13 4 40.67	1.133	4 27 40.2	6.93	23 24.3
16	13 5 7.85	+1.132	−4 30 26.2	−6.91	23 20.8
17	13 5 35.02	1.131	4 33 11.7	6.89	23 17.4
18	13 6 2.15	1.130	4 35 56.7	6.87	23 13.9
19	13 6 29.25	1.129	4 38 41.2	6.85	23 10.4
20	13 6 56.32	1.127	4 41 25.1	6.82	23 6.9
21	13 7 23.35	+1.125	−4 44 8.4	−6.79	23 3.5
22	13 7 50.33	1.123	4 46 51.2	6.77	23 0.0
23	13 8 17.27	1.121	4 49 33.3	6.75	22 56.5
24	13 8 44.15	1.119	4 52 14.7	6.72	22 53.0
25	13 9 10.98	1.117	4 54 55.5	6.69	22 49.5
26	13 9 37.75	+1.114	−4 57 35.6	−6.66	22 46.0
27	13 10 4.46	1.111	5 0 15.0	6.63	22 42.5
28	13 10 31.10	1.108	5 2 53.6	6.60	22 39.0
29	13 10 57.67	1.105	5 5 31.5	6.57	22 35.5
30	13 11 24.17	1.102	5 8 8.6	6.53	22 32.0
31	13 11 50.58	+1.099	−5 10 44.9	−6.49	22 28.5
32	13 12 16.91	+1.095	−5 13 20.3	−6.46	22 25.0

Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter . .	7″.3	7″.3	7″.4	7″.4
Horizontal Parallax . .	0.8	0.8	0.8	0.8

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 12 16.91	+1.095	−5 13 20.3	−6.46	22 25.0
2	13 12 43.16	1.091	5 15 54.9	6.43	22 21.5
3	13 13 9.31	1.087	5 18 28.6	6.39	22 18.0
4	13 13 35.37	1.083	5 21 1.4	6.35	22 14.5
5	13 14 1.32	1.079	5 23 33.2	6.31	22 11.0
6	13 14 27.17	+1.075	−5 26 4.0	−6.27	22 7.5
7	13 14 52.90	1.070	5 28 33.9	6.23	22 4.0
8	13 15 18.52	1.065	5 31 2.7	6.19	22 0.5
9	13 15 44.02	1.060	5 33 30.4	6.14	21 57.0
10	13 16 9.39	1.055	5 35 57.0	6.09	21 53.5
11	13 16 34.64	+1.049	−5 38 22.6	−6.04	21 50.0
12	13 16 59.75	1.043	5 40 47.0	5.99	21 46.5
13	13 17 24.71	1.037	5 43 10.2	5.94	21 42.9
14	13 17 49.54	1.031	5 45 32.2	5.89	21 39.4
15	13 18 14.22	1.025	5 47 53.0	5.84	21 35.9
16	13 18 38.74	+1.019	−5 50 12.6	−5.79	21 32.4
17	13 19 3.11	1.012	5 52 30.9	5.74	21 28.8
18	13 19 27.32	1.005	5 54 47.9	5.68	21 25.3
19	13 19 51.36	0.998	5 57 3.6	5.63	21 21.8
20	13 20 15.23	0.991	5 59 18.0	5.57	21 18.3
21	13 20 38.93	+0.984	−6 1 31.0	−5.52	21 14.7
22	13 21 2.46	0.977	6 3 42.7	5.46	21 11.2
23	13 21 25.80	0.969	6 5 53.0	5.40	21 7.6
24	13 21 48.95	0.961	6 8 1.8	5.34	21 4.1
25	13 22 11.91	0.953	6 10 9.3	5.28	21 0.5
26	13 22 34.69	+0.945	−6 12 15.2	−5.22	20 57.0
27	13 22 57.26	0.937	6 14 19.7	5.16	20 53.4
28	13 23 19.63	0.928	6 16 22.7	5.10	20 49.8
29	13 23 41.79	0.919	6 18 24.2	5.03	20 46.2
30	13 24 3.75	0.910	6 20 24.2	4.96	20 42.7
31	13 24 25.49	+0.901	−6 22 22.5	−4.90	20 39.1
32	13 24 47.00	+0.892	−6 24 19.2	−4.83	20 35.5

Day of the Month.	2d.	10th.	18th.	26th.
Polar Semidiameter . .	7.″4	7.″4	7.″5	7.″5
Horizontal Parallax . .	0.8	0.8	0.8	0.9

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 24 25.49	+0.901	−6 22 22.5	−4.90	20 39.1
2	13 24 47.00	0.892	6 24 19.2	4.83	20 35.5
3	13 25 8.29	0.883	6 26 14.3	4.76	20 31.9
4	13 25 29.35	0.873	6 28 7.8	4.69	20 28.3
5	13 25 50.17	0.863	6 29 59.7	4.62	20 24.7
6	13 26 10.75	+0.853	−6 31 49.8	−4.55	20 21.1
7	13 26 31.09	0.843	6 33 38.1	4.48	20 17.5
8	13 26 51.18	0.832	6 35 24.8	4.41	20 13.9
9	13 27 11.02	0.821	6 37 9.7	4.34	20 10.3
10	13 27 30.60	0.810	6 38 52.8	4.26	20 6.7
11	13 27 49.91	+0.799	−6 40 34.0	−4.19	20 3.1
12	13 28 8.96	0.788	6 42 13.5	4.11	19 59.5
13	13 28 27.74	0.777	6 43 51.1	4.03	19 55.9
14	13 28 46.24	0.765	6 45 26.9	3.95	19 52.3
15	13 29 4.46	0.753	6 47 0.7	3.87	19 48.6
16	13 29 22.40	+0.741	−6 48 32.7	−3.79	19 45.0
17	13 29 40.06	0.729	6 50 2.7	3.71	19 41.3
18	13 29 57.42	0.717	6 51 30.8	3.63	19 37.7
19	13 30 14.48	0.705	6 52 56.9	3.55	19 34.0
20	13 30 31.25	0.693	6 54 21.1	3.47	19 30.4
21	13 30 47.72	+0.680	−6 55 43.3	−3.39	19 26.8
22	13 31 3.88	0.667	6 57 3.5	3.31	19 23.1
23	13 31 19.73	0.654	6 58 21.7	3.23	19 19.4
24	13 31 35.28	0.641	6 59 37.9	3.14	19 15.7
25	13 31 50.51	0.628	7 0 52.0	3.06	19 12.0
26	13 32 5.41	+0.615	−7 2 4.1	−2.97	19 8.3
27	13 32 20.00	0.601	7 3 14.1	2.88	19 4.6
28	13 32 34.26	0.587	7 4 22.0	2.79	19 0.9
29	13 32 48.19	0.573	7 5 27.9	2.70	18 57.2
30	13 33 1.78	0.559	7 6 31.6	2.61	18 53.5
31	13 33 15.03	+0.545	−7 7 33.1	−2.52	18 49.8
32	13 33 27.94	+0.531	−7 8 32.5	−2.43	18 46.1

Day of the Month.	4th.	12th.	20th.	28th.	36th.
Polar Semidiameter . .	7.″6	7.″7	7.″8	7.″9	8.″0
Horizontal Parallax . .	0.9	0.9	0.9	0.9	0.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
Jan. 2	14 30 40.22	+8.655	−14 22 43.9	−40.89	19 38.2	July 1	14 18 4.51	− 2.710	−13 20 36.9	+11.79	7 37.8
6	14 31 13.41	7.933	14 25 20.2	37.98	19 23.0	5	14 17 55.21	1.936	13 19 57.6	7.85	7 21.9
10	14 31 43.64	7.180	14 27 42.0	33.55	19 7.8	9	14 17 49.03	1.145	13 19 34.2	+ 3.81	7 6.1
14	14 32 10.80	6.396	14 29 48.5	29.68	18 52.5	13	14 17 46.07	− 0.338	13 19 27.1	− 0.30	6 50.3
18	14 32 34.77	5.589	14 31 39.3	25.70	18 37.1	17	14 17 46.34	+ 0.476	13 19 36.6	4.45	6 34.6
22	14 32 55.44	+4.748	−14 33 14.0	−21.65	18 21.7	21	14 17 49.87	+ 1.290	−13 20 2.7	− 8.59	6 18.9
26	14 33 12.74	3.901	14 34 32.4	17.55	18 6.3	25	14 17 56.66	2.101	13 20 45.3	12.68	6 3.3
30	14 33 26.63	3.043	14 35 34.4	13.45	17 50.8	29	14 18 6.67	2.904	13 21 44.1	16.74	5 47.7
Feb. 3	14 33 37.07	2.177	14 36 19.9	9.32	17 35.2	Aug. 2	14 18 19.89	3.702	13 22 59.1	20.74	5 32.2
7	14 33 44.04	1.306	14 36 48.9	5.17	17 19.6	6	14 18 36.28	4.493	13 24 30.0	24.70	5 16.8
11	14 33 47.51	+0.432	−14 37 1.3	− 1.01	17 3.9	10	14 18 55.82	+ 5.275	−13 26 16.6	−28.59	5 1.4
15	14 33 47.49	−0.441	14 36 57.0	+ 3.14	16 48.2	14	14 19 18.46	6.040	13 28 18.5	32.38	4 46.0
19	14 33 44.00	1.303	14 36 36.3	7.22	16 32.4	18	14 19 44.11	6.784	13 30 35.4	36.04	4 30.7
23	14 33 37.09	2.146	14 35 59.3	11.21	16 16.5	22	14 20 12.69	7.504	13 33 6.7	39.55	4 15.4
27	14 33 26.85	2.968	14 35 6.7	15.08	16 0.6	26	14 20 44.10	8.197	13 35 51.6	42.90	4 0.3
Mar. 3	14 33 13.38	−3.762	−14 33 58.9	+18.83	15 44.6	30	14 21 18.24	+ 8.867	−13 38 49.7	−46.10	3 45.1
7	14 32 56.79	4.530	14 32 36.3	22.45	15 28.6	Sept. 3	14 21 55.01	9.512	13 42 0.3	49.16	3 30.0
11	14 32 37.18	5.267	14 30 59.4	25.95	15 12.6	7	14 22 34.30	10.130	13 45 22.8	52.06	3 14.9
15	14 32 14.70	5.967	14 29 8.9	29.27	14 56.5	11	14 23 16.01	10.717	13 48 56.5	54.78	2 59.9
19	14 31 49.51	6.621	14 27 5.5	32.39	14 40.3	15	14 23 59.99	11.268	13 52 40.7	57.29	2 44.9
23	14 31 21.80	−7.224	−14 24 50.1	+35.25	14 24.1	19	14 24 46.10	+11.781	−13 56 34.5	−59.58	2 29.9
27	14 30 51.79	7.772	14 22 23.8	37.86	14 7.9	23	14 25 34.18	12.255	14 0 37.0	61.64	2 15.0
31	14 30 19.71	8.261	14 19 47.6	40.21	13 51.6	27	14 26 24.09	12.692	14 4 47.4	63.51	2 0.1
Apr. 4	14 29 45.78	8.694	14 17 2.5	42.29	13 35.3	Oct. 1	14 27 15.67	13.092	14 9 4.9	65.19	1 45.2
8	14 29 10.22	9.073	14 14 9.6	44.12	13 19.0	5	14 28 8.78	13.457	14 13 28.7	66.67	1 30.4
12	14 28 33.28	−9.387	−14 11 10.0	+45.65	13 2.7	9	14 29 3.27	+13.780	−14 17 57.9	−67.91	1 15.5
16	14 27 55.21	9.634	14 8 4.8	46.86	12 46.3	13	14 29 58.96	14.056	14 22 31.6	68.90	1 0.7
20	14 27 16.30	9.808	14 4 55.6	47.71	12 30.0	17	14 30 55.66	14.285	14 27 8.8	69.65	0 46.0
24	14 26 36.84	9.912	14 1 43.6	48.22	12 13.6	21	14 31 53.18	14.467	14 31 48.5	70.17	0 31.2
28	14 25 57.10	9.948	13 58 30.2	48.39	11 57.2	25	14 32 51.34	14.606	14 36 29.9	70.47	0 16.4
May 2	14 25 17.34	−9.919	−13 55 16.8	+48.26	11 40.8	29	14 33 49.97	+14.702	−14 41 12.0	−70.56	0 1.7 23 56.0
6	14 24 37.83	9.825	13 52 4.6	47.81	11 24.4	Nov. 2	14 34 48.90	14.755	14 45 54.1	70.44	23 43.2
10	14 23 58.83	9.666	13 48 54.8	47.04	11 8.0	6	14 35 47.94	14.757	14 50 35.3	70.08	23 28.5
14	14 23 20.60	9.440	13 45 48.8	45.91	10 51.7	10	14 36 46.89	14.709	14 55 14.4	69.47	23 13.7
18	14 22 43.40	9.146	13 42 48.0	44.44	10 35.3	14	14 37 45.55	14.609	14 59 50.7	68.62	22 58.9
22	14 22 7.51	−8.790	−13 39 53.7	+42.66	10 19.0	18	14 38 43.70	+14.459	−15 4 23.1	−67.55	22 44.2
26	14 21 33.16	8.378	13 37 7.1	40.59	10 2.7	22	14 39 41.16	14.264	15 8 50.8	66.28	22 29.4
30	14 21 0.56	7.915	13 34 29.3	38.26	9 46.4	26	14 40 37.75	14.023	15 13 13.1	64.82	22 14.6
June 3	14 20 29.91	7.404	13 32 1.3	35.68	9 30.2	30	14 41 33.28	13.736	15 17 29.1	63.16	21 59.8
7	14 20 1.39	6.848	13 29 44.1	32.87	9 14.0	Dec. 4	14 42 27.57	13.400	15 21 38.1	61.28	21 45.0
11	14 19 35.19	−6.244	−13 27 38.7	+29.81	8 57.9	8	14 43 20.41	+13.013	−15 25 39.1	−59.20	21 30.1
15	14 19 11.49	5.598	13 25 46.0	26.52	8 41.8	12	14 44 11.61	12.577	15 29 31.4	56.92	21 15.2
19	14 18 50.45	4.914	13 24 6.8	23.03	8 25.7	16	14 45 0.96	12.093	15 33 14.2	54.44	21 0.3
23	14 18 32.21	4.202	13 22 41.9	19.40	8 9.7	20	14 45 48.30	11.568	15 36 46.8	51.81	20 45.4
27	14 18 16.87	3.466	13 21 31.8	15.64	7 53.7	24	14 46 33.46	11.005	15 40 8.5	49.04	20 30.4
July 1	14 18 4.51	−2.710	−13 20 36.9	+11.79	7 37.8	28	14 47 16.29	+10.402	−15 43 18.9	−46.12	20 15.4
5	14 17 55.21	−1.936	−13 19 57.6	+ 7.85	7 21.9	32	14 47 56.62	+ 9.757	−15 46 17.3	−43.04	20 0.3

Greatest semidiameter,	April	29, 1″.91.	Greatest horizontal parallax,	April	29, 0″.50.
Least semidiameter,	November	2, 1″.71.	Least horizontal parallax,	November	2, 0″.45.

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
Jan. 2	4 30 27.13	−5.739	+20 14 51.3	−10.14	9 39.5	July 1	4 43 13.92	+8.638	+20 46 55.1	+14.98	22 0.7
6	4 30 4.90	5.373	20 14 12.6	9.20	9 23.3	5	4 43 48.00	8.398	20 47 53.6	14.26	21 45.5
10	4 29 44.19	4.977	20 13 37.8	8.19	9 7.2	9	4 44 21.06	8.125	20 48 49.1	13.48	21 30.3
14	4 29 25.13	4.545	20 13 7.2	7.10	8 51.2	13	4 44 52.96	7.822	20 49 41.4	12.67	21 15.1
18	4 29 7.87	4.081	20 12 41.1	5.96	8 35.2	17	4 45 23.60	7.490	20 50 30.4	11.82	20 59.9
22	4 28 52.52	−3.588	+20 12 19.6	− 4.77	8 19.2	21	4 45 52.84	+7.128	+20 51 15.9	+10.94	20 44.7
26	4 28 39.19	3.075	20 12 3.0	3.53	8 3.3	25	4 46 20.60	6.747	20 51 57.9	10.05	20 29.4
30	4 28 27.94	2.545	20 11 51.4	2.26	7 47.4	29	4 46 46.79	6.342	20 52 36.3	9.14	20 14.1
Feb. 3	4 28 18.85	2.000	20 11 44.9	− 0.99	7 31.5	Aug. 2	4 47 11.31	5.915	20 53 11.0	8.20	19 58.8
7	4 28 11.96	1.441	20 11 43.5	+ 0.31	7 15.7	6	4 47 34.08	5.468	20 53 41.9	7.25	19 43.4
11	4 28 7.34	−0.870	+20 11 47.4	+ 1.64	6 59.9	10	4 47 55.02	+4.993	+20 54 9.0	+ 6.25	19 28.0
15	4 28 5.01	−0.291	20 11 56.6	2.95	6 44.1	14	4 48 14.00	4.499	20 54 32.2	5.30	19 12.6
19	4 28 5.02	+0.294	20 12 11.0	4.26	6 28.4	18	4 48 30.99	3.990	20 54 51.4	4.30	18 57.1
23	4 28 7.36	0.877	20 12 30.7	5.58	6 12.7	22	4 48 45.90	3.464	20 55 6.6	3.31	18 41.6
27	4 28 12.03	1.457	20 12 55.6	6.85	5 57.1	26	4 48 58.69	2.929	20 55 17.9	2.32	18 26.1
Mar. 3	4 28 19.01	+2.030	+20 13 25.4	+ 8.07	5 41.5	30	4 49 9.32	+2.384	+20 55 25.2	+ 1.34	18 10.6
7	4 28 28.26	2.594	20 14 0.1	9.27	5 25.9	Sept. 3	4 49 17.75	1.828	20 55 28.6	+ 0.35	17 55.0
11	4 28 39.75	3.152	20 14 39.5	10.42	5 10.3	7	4 49 23.93	1.262	20 55 28.0	− 0.63	17 39.3
15	4 28 53.46	3.697	20 15 23.4	11.51	4 54.0	11	4 49 27.84	0.691	20 55 23.6	1.60	17 23.7
19	4 29 9.31	4.226	20 16 11.6	12.58	4 39.4	15	4 49 29.46	+0.191	20 55 15.2	2.56	17 8.0
23	4 29 27.26	+4.741	+20 17 4.0	+13.59	4 24.0	19	4 49 28.81	−0.447	+20 55 3.0	− 3.52	16 52.2
27	4 29 47.21	5.232	20 18 0.2	14.50	4 8.6	23	4 49 25.89	1.011	20 54 47.1	4.43	16 36.4
31	4 30 9.09	5.703	20 18 59.9	15.35	3 53.2	27	4 49 20.73	1.568	20 54 27.6	5.32	16 20.6
Apr. 4	4 30 32.80	6.148	20 20 2.9	16.12	3 37.9	Oct. 1	4 49 13.36	2.114	20 54 4.6	6.18	16 4.8
8	4 30 58.25	6.575	20 21 8.8	16.83	3 22.6	5	4 49 3.83	2.651	20 53 38.2	7.03	15 48.9
12	4 31 25.37	+6.980	+20 22 17.5	+17.49	3 7.3	9	4 48 52.17	−3.175	+20 53 8.4	− 7.83	15 32.9
16	4 31 54.05	7.355	20 23 28.6	18.05	2 52.0	13	4 48 38.46	3.675	20 52 35.6	8.58	15 17.0
20	4 32 24.17	7.700	20 24 41.8	18.53	2 36.8	17	4 48 22.79	4.153	20 51 59.8	9.31	15 1.0
24	4 32 55.61	8.018	20 25 56.8	18.92	2 21.6	21	4 48 5.27	4.603	20 51 21.2	9.96	14 45.0
28	4 33 28.27	8.304	20 27 13.1	19.26	2 6.4	25	4 47 46.00	5.029	20 50 40.2	10.56	14 28.9
May 2	4 34 2.00	+8.558	+20 28 30.7	+19.52	1 51.2	29	4 47 25.08	−5.425	+20 49 56.8	−11.14	14 12.9
6	4 34 36.70	8.787	20 29 49.0	19.67	1 36.1	Nov. 2	4 47 2.65	5.785	20 49 11.2	11.64	13 56.7
10	4 35 12.26	8.988	20 31 7.9	19.77	1 21.0	6	4 46 38.85	6.112	20 48 23.8	12.06	13 40.6
14	4 35 48.56	9.156	20 32 27.1	19.80	1 5.8	10	4 46 13.81	6.400	20 47 34.9	12.41	13 24.5
18	4 36 25.46	9.288	20 33 46.2	19.75	0 50.7	14	4 45 47.71	6.645	20 46 44.6	12.70	13 8.3
22	4 37 2.82	+9.388	+20 35 5.0	+19.61	0 35.6	18	4 45 20.71	−6.845	+20 45 53.4	−12.89	12 52.1
26	4 37 40.52	9.455	20 36 23.0	19.38	0 20.5	22	4 44 53.01	7.000	20 45 1.6	13.01	12 36.0
30	4 38 18.42	9.490	20 37 40.0	19.12	0 5.4	26	4 44 24.76	7.115	20 44 9.4	13.06	12 19.8
June 3	4 38 56.40	9.495	20 38 55.9	18.82	23 46.5	30	4 43 56.15	7.185	20 43 17.1	13.04	12 3.6
7	4 39 34.34	9.470	20 40 10.5	18.45	23 31.4	Dec. 4	4 43 27.34	7.208	20 42 25.2	12.90	11 47.4
11	4 40 12.12	+9.413	+20 41 23.4	+18.00	23 16.3	8	4 42 58.55	−7.180	+20 41 34.0	−12.69	11 31.2
15	4 40 49.60	9.322	20 42 34.4	17.48	23 1.2	12	4 42 29.96	7.107	20 40 43.8	12.38	11 15.0
19	4 41 26.65	9.196	20 43 43.2	16.93	22 46.1	16	4 42 1.76	6.984	20 39 55.1	11.98	10 58.8
23	4 42 3.13	9.040	20 44 49.8	16.33	22 31.0	20	4 41 34.15	6.813	20 39 8.1	11.52	10 42.6
27	4 42 38.93	8.853	20 45 53.8	15.67	22 15.8	24	4 41 7.31	6.600	20 38 23.1	10.95	10 26.4
July 1	4 43 13.92	+8.638	+20 46 55.1	+14.98	22 0.7	28	4 40 41.40	−6.349	+20 37 40.6	−10.31	10 10.3
5	4 43 48.00	+8.398	+20 47 53.6	+14.26	21 45.5	32	4 40 16.56	−6.066	+20 37 0.7	− 9.61	9 54.1

Greatest semidiameter, December 3, 1″.33.
Least semidiameter, June 2, 1″.25.
Greatest horizontal parallax, December 3, 0″.31.
Least horizontal parallax, June 2, 0″.29.

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Jan. 0	181 46 40.8	3 53 30.9	−12 52.2	+4 59 18.4	−20 1.8	9.5940595	0.0013428	0.0099661
2	189 20 30.7	3 40 36.0	12 28.2	4 17 51.5	21 18.9	9.6059891	0.0182172	0.0261032
4	196 30 11.2	3 29 20.8	11 17.4	3 34 24.4	22 3.5	9.6169819	0.0336340	0.0408201
6	203 18 56.0	3 19 38.9	9 30.7	2 49 53.7	22 23.6	9.6269663	0.0476730	0.0542048
8	209 49 44.2	3 11 23.2	7 18.2	2 5 2.0	22 25.5	9.6359022	0.0604279	0.0663544
10	216 5 21.2	3 4 26.2	− 4 49.5	+1 20 20.7	−22 13.8	9.6437698	0.0719958	0.0773636
12	222 8 16.8	2 58 40.7	− 2 12.6	+0 36 13.7	21 51.9	9.6505625	0.0824689	0.0873220
14	228 0 47.7	2 54 0.6	+ 0 25.3	−0 7 1.7	21 22.4	9.6562825	0.0919332	0.0963118
16	233 44 59.7	2 50 21.2	2 59.4	0 49 11.8	20 46.8	9.6609356	0.1004666	0.1044059
18	239 22 50.2	2 47 38.4	5 23.3	1 30 5.5	20 6.2	9.6645300	0.1081372	0.1116677
20	244 56 8.8	2 45 48.6	+ 7 32.6	−2 9 33.9	−19 21.4	9.6670731	0.1150041	0.1181523
22	250 26 38.6	2 44 49.6	9 24.2	2 47 28.5	18 32.4	9.6685712	0.1211179	0.1239058
24	255 56 0.1	2 44 40.1	10 54.5	3 23 40.7	17 39.0	9.6690281	0.1265208	0.1289662
26	261 25 51.4	2 45 19.3	12 0.7	3 58 1.5	16 40.9	9.6684449	0.1312458	0.1333625
28	266 57 50.0	2 46 47.7	12 40.7	4 30 20.6	15 37.2	9.6668200	0.1353187	0.1371162
30	272 33 35.8	2 49 6.5	+12 52.1	−5 0 26.0	−14 26.9	9.6641496	0.1387566	0.1402401
Feb. 1	278 14 50.5	2 52 17.0	12 33.7	5 28 2.9	13 8.6	9.6604271	0.1415673	0.1427379
3	284 3 20.3	2 56 22.4	11 44.5	5 52 54.1	11 40.6	9.6556448	0.1437507	0.1446046
5	290 0 58.7	3 1 26.0	10 24.1	6 14 37.6	10 0.8	9.6497947	0.1452971	0.1458257
7	296 9 45.7	3 7 31.9	8 33.3	6 32 47.7	8 6.6	9.6428714	0.1461863	0.1463751
9	302 31 51.2	3 14 45.3	+ 6 14.0	−6 46 52.6	− 5 55.1	9.6348736	0.1463873	0.1462169
11	309 9 35.3	3 23 11.4	3 29.5	6 56 14.3	3 22.8	9.6258090	0.1458572	0.1452994
13	316 5 29.0	3 32 55.8	+ 0 25.8	7 0 7.7	− 0 26.1	9.6156993	0.1445354	0.1435563
15	323 22 14.4	3 44 4.1	− 2 48.2	6 57 40.0	+ 2 58.6	9.6045882	0.1423505	0.1409058
17	331 2 44.2	3 56 40.7	6 1.0	6 47 51.0	6 55.4	9.5925514	0.1392090	0.1372457
19	339 9 57.0	4 10 47.2	− 8 57.1	−6 29 34.5	+11 26.6	9.5797103	0.1349992	0.1324522
21	347 46 51.2	4 26 21.0	11 17.1	6 1 41.5	16 31.8	9.5662484	0.1295861	0.1263802
23	356 56 13.2	4 43 12.8	12 39.5	5 23 7.5	22 6.5	9.5524299	0.1228133	0.1188624
25	6 40 21.5	5 1 2.8	12 42.8	4 33 3.2	27 59.4	9.5386187	0.1145038	0.1097140
27	17 0 41.2	5 19 17.4	11 10.7	3 31 11.7	33 49.3	9.5252917	0.1044673	0.0987395
Mar. 1	27 57 14.0	5 37 5.6	− 7 59.1	−2 18 9.4	+39 3.9	9.5130364	0.0925084	0.0857519
3	39 28 2.8	5 53 20.6	− 3 23.1	−0 55 47.9	43 0.8	9.5025242	0.0784506	0.0705898
5	51 28 39.6	6 6 40.2	+ 1 59.1	+0 32 31.2	44 54.3	9.4944467	0.0621591	0.0531534
7	63 51 51.6	6 15 42.1	7 8.7	2 2 2.0	44 7.4	9.4894178	0.0435749	0.0334328
9	76 27 50.5	6 19 18.4	11 1.9	3 27 4.3	40 26.5	9.4878586	0.0227445	0.0115365
11	89 5 4.9	6 16 55.1	+12 48.5	+4 42 3.8	+34 9.9	9.4899062	9.9998434	9.9877095
13	101 31 37.7	6 8 42.9	12 9.7	5 42 30.6	26 3.9	9.4953811	9.9751864	9.9623341
15	113 36 39.5	5 55 35.9	9 22.5	6 25 47.1	17 10.0	9.5038296	9.9492196	9.9359175
17	125 11 39.6	5 38 56.7	5 9.8	6 51 17.6	8 26.5	9.5146207	9.9225082	9.9090780
19	136 11 5.5	5 20 16.4	+ 0 23.5	7 0 8.3	+ 0 35.6	9.5270603	9.8957185	9.8825250
21	146 32 19.5	5 0 57.1	− 4 9.9	+6 54 30.5	− 6 0.0	9.5404854	9.8695978	9.8570387
23	156 15 10.5	4 42 2.1	7 58.1	6 37 2.9	11 14.8	9.5543228	9.8449520	9.8334415
25	165 21 12.3	4 24 13.2	10 43.3	6 10 24.4	15 12.3	9.5681120	9.8226079	9.8125500
27	173 53 4.3	4 7 55.2	12 20.3	5 36 57.5	18 4.6	9.5815027	9.8033586	9.7951156
29	181 54 0.9	3 53 18.7	12 52.3	4 58 41.6	20 3.4	9.5942433	9.7878897	9.7817372
31	189 27 27.9	3 40 25.2	−12 27.4	+4 17 12.2	−21 19.9	9.6061601	9.7766969	9.7727898
33	196 36 48.3	3 29 11.4	−11 16.0	+3 33 43.6	−22 4.1	9.6171388	9.7700206	9.7683743

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Apr. 2	196 36 48.3	3 29 11.4	−11 16.0	+3 33 43.6	−22 4.1	9.6171388	9.7700206	9.7683743
4	203 25 15.7	3 19 30.9	9 28.9	2 49 12.2	22 23.8	9.6271083	9.7678195	9.7683114
6	209 55 49.3	3 11 16.4	7 16.0	2 4 20.4	22 25.4	9.6360287	9.7697915	9.7721922
8	216 11 13.5	3 4 20.3	4 47.2	1 19 39.4	22 13.5	9.6438803	9.7754391	9.7794544
10	222 13 58.3	2 58 36.0	− 2 10.1	+0 35 33.0	21 51.4	9.6506574	9.7841588	9.7894730
12	228 6 21.0	2 53 57.0	+ 0 28.1	−0 7 41.4	−21 21.9	9.6563616	9.7953210	9.8016305
14	233 50 26.6	2 50 18.4	3 1.8	0 49 50.4	20 46.2	9.6609991	9.8083338	9.8153695
16	239 28 12.3	2 47 36.4	5 25.3	1 30 42.9	20 5.6	9.6645780	9.8226810	9.8302173
18	245 1 27.5	2 45 47.3	7 34.5	2 10 9.9	19 20.7	9.6671056	9.8379335	9.8457897
20	250 31 55.5	2 44 49.1	9 25.7	2 48 2.9	18 31.6	9.6685882	9.8537522	9.8617897
22	256 1 16.7	2 44 40.2	+10 55.6	−3 24 13.5	−17 38.2	9.6690296	9.8698764	9.8779893
24	261 31 8.8	2 45 20.2	12 1.5	3 58 32.4	16 40.0	9.6684307	9.8861094	9.8942213
26	267 3 10.4	2 46 49.4	12 41.1	4 30 49.6	15 36.2	9.6667900	9.9023109	9.9103649
28	272 38 59.9	2 49 8.6	12 52.0	5 0 52.8	14 25.8	9.6641036	9.9183740	9.9263300
30	278 20 19.8	2 52 20.2	12 33.2	5 28 27.4	13 7.3	9.6603650	9.9342251	9.9420537
May 2	284 8 57.0	2 56 26.4	+11 43.6	−5 53 15.7	−11 39.2	9.6555662	9.9498099	9.9574891
4	290 6 44.4	3 1 30.9	10 22.7	6 14 56.2	9 59.2	9.6496997	9.9650872	9.9726001
6	296 15 42.3	3 7 37.8	8 31.5	6 33 2.7	8 4.7	9.6427599	9.9800238	9.9873549
8	302 38 0.8	3 14 52.4	6 11.8	6 47 3.5	5 52.9	9.6347456	9.9945902	0.0017250
10	309 16 0.4	3 23 19.7	3 26.7	6 56 20.5	3 20.3	9.6256645	0.0087551	0.0156764
12	316 12 11.9	3 33 5.4	+ 0 23.0	−7 0 8.4	− 0 23.2	9.6155389	0.0224838	0.0291710
14	323 29 17.9	3 44 15.0	− 2 51.2	6 57 34.4	+ 3 2.3	9.6044126	0.0357317	0.0421590
16	331 10 10.9	3 56 52.9	6 3.8	6 47 38.2	6 59.6	9.5923621	0.0484445	0.0545786
18	339 17 49.6	4 11 0.8	8 59.5	6 29 13.3	11 31.1	9.5795096	0.0605514	0.0663510
20	347 55 12.5	4 26 36.3	11 18.9	6 1 11.0	16 36.7	9.5660398	0.0719642	0.0773764
22	357 5 5.9	4 43 29.0	−12 40.2	−5 22 26.7	+22 11.9	9.5522180	0.0825718	0.0875327
24	6 49 47.2	5 1 19.6	12 42.0	4 32 11.5	28 4.9	9.5384098	0.0922401	0.0966743
26	17 10 40.8	5 19 34.3	11 8.5	3 30 9.2	33 54.5	9.5250938	0.1008139	0.1046356
28	28 7 46.8	5 37 22.1	7 55.5	2 16 57.2	39 8.2	9.5128594	0.1081170	0.1112354
30	39 39 5.8	5 53 34.6	− 3 18.3	−0 54 28.5	43 3.6	9.5023786	0.1139679	0.1162928
June 1	51 40 7.9	6 6 51.1	+ 2 4.0	+0 33 54.2	+44 54.7	9.4943431	0.1181905	0.1196436
3	64 3 37.1	6 15 48.5	7 13.1	2 3 23.1	44 5.4	9.4893643	0.1206380	0.1211639
5	76 39 43.6	6 19 19.4	11 4.6	3 28 19.2	40 22.0	9.4878596	0.1212150	0.1207901
7	89 16 54.1	6 16 50.5	12 49.0	4 43 7.0	34 3.0	9.4899617	0.1198924	0.1185303
9	101 43 12.6	6 8 33.2	12 8.0	5 43 18.9	25 55.8	9.4954861	0.1167154	0.1144631
11	113 47 50.6	5 55 22.2	+ 9 19.1	+6 26 18.9	+17 1.7	9.5039756	0.1117924	0.1087239
13	125 22 20.7	5 38 40.6	5 5.8	6 51 33.2	8 18.6	9.5147973	0.1052797	0.1014835
15	136 21 12.8	5 19 58.8	+ 0 18.9	7 0 9.3	+ 0 28.8	9.5272571	0.0973584	0.0929277
17	146 41 51.1	5 0 39.5	− 4 13.6	6 54 19.2	− 6 5.4	9.5406930	0.0882136	0.0832378
19	156 24 7.7	4 41 45.1	8 1.3	6 36 41.9	11 18.5	9.5545335	0.0780202	0.0725799
21	165 29 36.4	4 23 57.4	−10 45.3	+6 9 56.0	−15 15.5	9.5683193	0.0669338	0.0610980
23	174 0 58.5	4 7 40.9	12 21.3	5 36 23.6	18 6.9	9.5817025	0.0550871	0.0489140
25	182 1 27.8	3 53 5.9	12 52.3	4 58 4.0	20 4.6	9.5944323	0.0425905	0.0361268
27	189 34 30.9	3 40 14.0	12 26.7	4 16 32.2	21 20.8	9.6063361	0.0295326	0.0228162
29	196 43 30.3	3 29 1.7	11 14.6	3 33 2.2	22 4.7	9.6173001	0.0159850	0.0090457
31	203 31 39.9	3 19 22.6	− 9 27.1	+2 48 30.3	−22 24.0	9.6272544	0.0020042	9.9948659
33	210 1 57.8	3 11 9.2	− 7 13.9	+2 3 38.4	−22 25.3	9.6361587	9.9876365	9.9803198

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
July 1	203 31 39.9	3 19 22.6	− 9 27.1	+2 48 30.3	−22 24.0	9.6272544	0.0020042	9.9948650
3	210 1 57.8	3 11 9.2	7 13.9	2 3 38.4	22 25.3	9.6361587	9.9876365	9.9803198
5	216 17 8.8	3 4 14.3	4 44.8	1 18 57.9	22 13.2	9.6430944	9.9729208	9.9654439
7	222 19 42.8	2 58 31.0	− 2 7.6	+0 34 52.1	21 51.1	9.6507552	9.9578927	9.9502723
9	228 11 56.6	2 53 53.4	+ 0 30.6	−0 8 21.4	21 21.3	9.6564434	9.9425879	9.9348450
11	233 55 55.1	2 50 15.7	+ 3 4.0	−0 50 29.2	−20 45.6	9.6610647	9.9270492	9.9192074
13	239 33 35.8	2 47 34.2	5 27.4	1 31 20.5	20 4.9	9.6646272	9.9113280	9.9034207
15	245 6 47.5	2 45 46.0	7 36.4	2 10 46.1	19 20.0	9.6671388	9.8954960	9.8875674
17	250 37 13.6	2 44 48.5	9 27.3	2 48 37.5	18 30.8	9.6686054	9.8796499	9.8717606
19	256 6 34.5	2 44 40.5	10 56.8	3 24 46.4	17 37.3	9.6690305	9.8639198	9.8561513
21	261 36 28.0	2 45 21.0	+12 2.3	−3 59 3.6	−16 39.0	9.6684154	9.8484823	9.8409431
23	267 8 32.1	2 46 51.2	12 41.5	4 31 18.8	15 35.2	9.6667584	9.8335700	9.8264023
25	272 44 26.3	2 49 11.4	12 52.0	5 1 19.8	14 24.6	9.6640555	9.8194849	9.8128677
27	278 25 52.2	2 52 23.7	12 32.7	5 28 51.9	13 6.1	9.6603002	9.8066046	9.8007548
29	284 14 36.9	2 56 30.6	11 42.6	5 53 37.5	11 37.7	9.6554847	9.7953820	9.7905537
31	290 12 33.8	3 1 36.1	+10 21.1	−6 15 14.8	− 9 57.5	9.6496014	9.7863403	9.7828134
Aug. 2	296 21 43.1	3 7 44.1	8 29.4	6 33 17.8	8 2.8	9.6426446	9.7800427	9.7780981
4	302 44 15.2	3 14 59.6	6 9.2	6 47 14.5	5 50.7	9.6346134	9.7770447	9.7769394
6	309 22 30.2	3 23 28.1	3 24.1	6 56 26.7	3 17.8	9.6255157	9.7778316	9.7797582
8	316 19 0.0	3 33 15.1	+ 0 20.1	7 0 9.1	− 0 20.3	9.6153739	9.7827432	9.7867960
10	323 36 26.8	3 44 26.2	− 2 54.2	−6 57 28.8	+ 3 5.7	9.6042323	9.7919107	9.7980646
12	331 17 43.6	3 57 5.4	6 6.8	6 47 25.1	7 3.6	9.5921682	9.8052216	9.8133311
14	339 25 48.6	4 11 14.6	9 2.0	6 28 51.8	11 35.4	9.5793044	9.8223289	9.8321413
16	348 3 40.4	4 26 51.1	11 20.6	6 0 39.9	16 41.7	9.5658267	9.8426867	9.8538773
18	357 14 5.0	4 43 45.2	12 40.8	5 21 45.2	22 17.2	9.5520020	9.8656208	9.8778223
20	6 59 19.6	5 1 36.6	−12 41.5	−4 31 19.1	+28 10.4	9.5381977	9.8903873	9.9032220
22	17 20 47.2	5 19 51.3	11 6.2	3 29 5.9	33 59.8	9.5248938	9.9162342	9.9293339
24	28 18 26.5	5 37 38.2	7 51.8	2 15 44.1	39 12.6	9.5126813	9.9424350	9.9554549
26	39 50 15.7	5 53 48.6	− 3 13.5	−0 53 8.2	43 6.4	9.5022334	9.9683160	9.9809459
28	51 51 42.6	6 7 1.7	+ 2 9.2	+0 35 18.0	44 55.4	9.4942409	9.9932776	0.0052503
30	64 15 28.5	6 15 54.4	+ 7 17.2	+2 4 45.5	+44 3.1	9.4893132	0.0168113	0.0279137
Sept. 1	76 51 41.2	6 19 19.7	11 7.3	3 29 34.4	40 17.1	9.4878644	0.0385196	0.0485988
3	89 28 46.3	6 16 44.4	12 49.4	4 44 10.4	33 56.2	9.4900215	0.0581295	0.0670987
5	101 54 49.9	6 8 22.3	12 6.2	5 44 7.2	25 47.7	9.4955960	0.0754997	0.0833339
7	113 59 3.3	5 55 8.2	9 15.7	6 26 50.6	16 53.3	9.5041268	0.0906088	0.0973354
9	125 33 2.0	5 38 23.6	+ 5 1.1	+6 51 48.6	+ 8 10.8	9.5149792	0.1035315	0.1092162
11	136 31 18.7	5 19 40.9	+ 0 14.6	7 0 10.1	+ 0 22.1	9.5274589	0.1144117	0.1191411
13	146 51 21.3	5 0 21.5	− 4 17.8	6 54 7.8	− 6 10.9	9.5409052	0.1234288	0.1272986
15	156 33 2.1	4 41 27.7	8 4.3	6 36 20.8	11 22.7	9.5547480	0.1307743	0.1338790
17	165 37 57.6	4 23 41.6	10 47.3	6 9 27.6	15 18.6	9.5685300	0.1366347	0.1390621
19	174 8 49.4	4 7 26.6	−12 22.2	+5 35 49.9	−18 9.2	9.5819048	0.1411801	0.1430076
21	182 8 51.6	3 52 53.1	12 52.3	4 57 26.6	20 6.2	9.5946230	0.1445606	0.1458547
23	189 41 30.6	3 40 2.8	12 25.9	4 15 52.7	21 21.7	9.6065131	0.1469037	0.1477198
25	196 50 9.3	3 28 52.1	11 13.1	3 32 21.2	22 5.1	9.6174621	0.1483147	0.1486984
27	203 38 0.9	3 19 14.4	9 25.2	2 47 48.6	22 24.2	9.6274003	0.1488794	0.1488662
29	210 8 3.7	3 11 9.3	− 7 11.6	+2 2 56.6	−22 25.3	9.6362881	0.1486656	0.1482832
31	216 23 2.2	3 4 8.6	− 4 42.5	+1 18 16.5	−22 12.9	9.6441071	0.1477247	0.1469942

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Oct. 1	216 23 2.2	3 4 8.6	− 4 42.5	+1 18 16.5	−22 12.9	9.6441071	0.1477247	0.1469942
3	222 25 25.4	2 58 26.0	− 2 5.2	+0 34 11.5	21 50.6	9.6508513	0.1460953	0.1450307
5	228 17 30.3	2 53 49.2	+ 0 33.1	−0 9 1.1	21 20.9	9.6565228	0.1438031	0.1424134
7	234 1 22.4	2 50 12.6	3 6.4	0 51 7.9	20 45.1	9.6611276	0.1408628	0.1391517
9	239 38 58.2	2 47 32.2	5 29.6	1 31 58.0	20 4.3	9.6646738	0.1372798	0.1352465
11	245 12 6.6	2 45 44.8	+ 7 38.2	−2 11 22.1	−19 19.2	9.6671689	0.1330505	0.1306901
13	250 42 31.0	2 44 46.0	9 28.9	2 49 12.0	18 30.0	9.6686192	0.1281631	0.1254668
15	256 11 51.5	2 44 40.8	10 58.2	3 25 19.2	17 36.5	9.6690281	0.1225978	0.1195524
17	261 41 46.3	2 45 22.2	12 3.2	3 59 34.6	16 38.1	9.6683967	0.1163268	0.1129158
19	267 13 53.3	2 46 53.0	12 41.9	4 31 47.8	15 34.1	9.6667236	0.1093146	0.1055174
21	272 49 51.7	2 49 13.9	+12 51.9	−5 1 46.6	−14 23.5	9.6640044	0.1015177	0.0973093
23	278 31 23.6	2 52 26.9	12 32.1	5 29 16.3	13 4.8	9.6602328	0.0928844	0.0882350
25	284 20 16.1	2 56 35.0	11 41.5	5 53 59.1	11 36.3	9.6554008	0.0833533	0.0782296
27	290 18 22.4	3 1 41.3	10 19.6	6 15 33.4	9 55.8	9.6495009	0.0728552	0.0672199
29	296 27 43.2	3 7 50.4	8 27.4	6 33 32.7	8 0.9	9.6425276	0.0613127	0.0551236
31	302 50 28.8	3 15 6.9	+ 6 6.8	−6 47 25.3	− 5 48.5	9.6344800	0.0486415	0.0418552
Nov. 2	309 28 59.5	3 23 36.4	3 21.5	6 56 32.8	3 15.2	9.6253661	0.0347536	0.0273260
4	316 25 47.5	3 33 24.9	+ 0 17.1	7 0 9.7	− 0 17.3	9.6152086	0.0195627	0.0114549
6	323 43 35.3	3 44 37.4	− 2 57.3	6 57 22.9	+ 3 9.1	9.6040526	0.0029952	9.9941795
8	331 25 15.7	3 57 17.9	6 9.8	6 47 11.9	7 7.5	9.5919753	9.9850071	9.9754817
10	339 33 47.1	4 11 26.5	− 9 4.5	−6 28 30.1	+11 40.1	9.5791008	9.9656136	9.9554215
12	348 12 8.1	4 27 6.4	11 22.4	6 0 8.8	16 46.7	9.5656161	9.9449347	9.9341958
14	357 23 4.3	4 44 1.5	12 41.6	5 21 3.6	22 22.6	9.5517892	9.9232641	9.9122191
16	7 8 52.3	5 1 53.6	12 40.8	4 30 26.5	28 16.0	9.5379891	9.9011648	9.8902318
18	17 30 54.0	5 20 8.2	11 4.1	3 28 2.2	34 5.0	9.5246978	9.8795813	9.8694051
20	28 29 6.2	5 37 54.2	− 7 48.1	−2 14 31.0	+39 16.7	9.5125079	9.8599250	9.8513861
22	40 1 25.5	5 54 2.5	− 3 8.8	−0 51 47.7	43 9.1	9.5020930	9.8440479	9.8381667
24	52 3 16.0	6 7 11.2	+ 2 14.2	+0 36 41.5	44 55.8	9.4941437	9.8339773	9.8316703
26	64 27 17.7	6 15 59.8	7 21.7	2 6 7.3	44 1.0	9.4892673	9.8313703	9.8331206
28	77 3 36.1	6 19 19.9	11 9.9	3 30 49.2	40 12.3	9.4878739	9.8368774	9.8425131
30	89 40 36.6	6 16 39.9	+12 49.9	+4 45 13.3	+33 49.2	9.4900860	9.8498315	9.8585873
Dec. 2	102 6 23.4	6 8 12.4	12 4.6	5 44 54.9	25 39.6	9.4967100	9.8685100	9.8793253
4	114 10 11.6	5 54 53.6	9 12.3	6 27 21.7	16 45.0	9.5042814	9.8907724	9.9026161
6	125 43 38.9	5 38 6.8	4 56.9	6 52 3.6	8 3.2	9.5151638	9.9146526	9.9267123
8	136 41 20.8	5 19 22.9	+ 0 10.2	7 0 10.7	+ 0 15.4	9.5276628	9.9386591	9.9503875
10	147 0 47.1	5 0 3.4	− 4 21.7	+6 53 56.3	− 6 16.3	9.5411190	9.9618178	9.9728938
12	156 41 52.7	4 41 10.7	8 7.3	6 35 59.7	11 27.0	9.5549636	9.9835761	9.9938409
14	165 46 15.5	4 23 25.6	10 49.4	6 8 59.2	15 21.7	9.5687411	0.0036752	0.0130746
16	174 16 36.8	4 7 12.2	12 23.1	5 35 16.3	18 11.3	9.5821070	0.0220421	0.0305846
18	182 16 12.3	3 52 40.5	12 52.3	4 56 49.4	20 7.8	9.5948130	0.0387123	0.0464360
20	189 48 27.5	3 39 51.6	−12 26.1	+4 15 13.0	−21 22.6	9.6066886	0.0537756	0.0607402
22	196 56 45.3	3 26 42.3	11 11.7	3 31 40.4	22 5.4	9.6176219	0.0673466	0.0736102
24	203 44 18.8	3 19 6.0	9 23.2	2 47 7.2	22 24.2	9.6275439	0.0795458	0.0851679
26	210 14 6.4	3 10 55.2	7 9.5	2 2 15.3	22 25.1	9.6364150	0.0904899	0.0955255
28	216 28 51.9	3 4 2.6	4 40.0	1 17 35.5	22 19.7	9.6442171	0.1002866	0.1047851
30	222 31 4.5	2 58 21.4	− 2 2.6	+0 33 31.2	−21 50.9	9.6509446	0.1090318	0.1130368
32	228 23 1.1	2 53 45.5	+ 0 35.4	−0 9 40.5	−21 20.3	9.6565994	0.1168097	0.1203594

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Jan.–2	205 13 18.2	1 36 30.9	–2 57.6	+2 37 10.8	–3 38.0	9.8585373	0.1394313	0.1426449
2	211 39 0.1	1 36 20.0	3 0.9	2 21 42.3	4 5.9	9.8588619	0.1457934	0.1488783
6	218 3 58.1	1 36 9.0	2 55.1	2 4 28.6	4 30.5	9.8591918	0.1519001	0.1548596
10	224 28 12.2	1 35 58.1	2 40.6	1 45 43.2	4 51.6	9.8595231	0.1577568	0.1605925
14	230 51 43.2	1 35 47.5	2 18.1	1 25 40.6	5 9.0	9.8598516	0.1633671	0.1660813
18	237 14 33.0	1 35 37.4	–1 48.9	+1 4 36.1	–5 22.6	9.8601733	0.1687361	0.1713324
22	243 36 43.8	1 35 28.1	1 14.3	0 42 45.5	5 32.1	9.8604841	0.1738720	0.1763561
26	249 58 19.0	1 35 19.6	–0 36.1	+0 20 25.1	5 37.4	9.8607802	0.1787860	0.1811633
30	256 19 22.2	1 35 12.1	+0 3.8	–0 2 8.5	5 38.7	9.8610582	0.1834889	0.1857637
Feb. 3	262 39 57.3	1 35 5.7	0 43.5	0 24 38.8	5 35.8	9.8613144	0.1879880	0.1901623
7	269 0 9.0	1 35 0.4	+1 21.0	–0 46 49.6	–5 28.9	9.8615459	0.1922862	0.1943601
11	275 20 1.7	1 34 56.2	1 54.5	1 8 24.8	5 18.0	9.8617499	0.1963839	0.1983574
15	281 39 40.2	1 34 53.2	2 22.4	1 29 6.9	5 3.4	9.8619239	0.2002810	0.2021552
19	287 59 9.0	1 34 51.4	2 43.4	1 48 47.0	4 45.1	9.8620658	0.2039802	0.2057574
23	294 18 32.5	1 34 50.6	2 56.5	2 7 5.0	4 23.4	9.8621741	0.2074869	0.2091703
27	300 37 55.0	1 34 50.9	+3 1.0	–2 23 50.0	–3 58.6	9.8622474	0.2108078	0.2124002
Mar. 3	306 57 20.7	1 34 52.1	2 56.6	2 38 49.8	3 30.9	9.8622849	0.2139476	0.2154503
7	313 16 52.7	1 34 54.1	2 43.8	2 51 53.7	3 0.6	9.8622861	0.2169080	0.2183203
11	319 36 34.5	1 34 56.9	2 23.0	3 2 52.2	2 28.2	9.8622512	0.2196863	0.2210054
15	325 56 28.8	1 35 0.4	1 55.2	3 11 37.3	1 54.0	9.8621802	0.2222774	0.2235021
19	332 16 38.0	1 35 4.4	+1 21.7	–3 18 2.6	–1 18.4	9.8620741	0.2246793	0.2258088
23	338 37 4.2	1 35 8.8	0 44.4	3 22 3.1	0 41.7	9.8619343	0.2268914	0.2279269
27	344 57 48.9	1 35 13.6	+0 4.9	3 23 35.5	–0 4.5	9.8617625	0.2289158	0.2298586
31	351 18 53.6	1 35 18.6	–0 35.0	3 22 38.7	+0 32.9	9.8615606	0.2307551	0.2316050
Apr. 4	357 40 19.3	1 35 24.2	1 13.2	3 19 12.6	1 10.0	9.8613310	0.2324086	0.2331648
8	4 2 7.0	1 35 29.8	–1 47.9	–3 13 19.3	+1 46.4	9.8610766	0.2338730	0.2345322
12	10 24 17.4	1 35 35.5	2 17.2	3 5 2.8	2 21.6	9.8608004	0.2351408	0.2356990
16	16 46 51.3	1 35 41.5	2 39.9	2 54 28.7	2 55.2	9.8605056	0.2362058	0.2366605
20	23 9 49.3	1 35 47.6	2 54.6	2 41 44.1	3 26.8	9.8601961	0.2370629	0.2374129
24	29 33 12.1	1 35 53.9	3 0.8	2 26 58.0	3 55.8	9.8598753	0.2377106	0.2379561
28	35 57 0.3	1 36 0.3	–2 58.0	–2 10 21.1	+4 22.1	9.8595475	0.2381497	0.2382911
May 2	42 21 14.5	1 36 6.9	2 46.3	1 52 5.2	4 45.3	9.8592166	0.2383797	0.2384154
6	48 45 55.7	1 36 13.7	2 26.3	1 32 23.5	5 5.0	9.8588868	0.2383969	0.2383238
10	55 11 4.4	1 36 20.7	1 59.0	1 11 30.7	5 20.8	9.8585622	0.2381951	0.2380091
14	61 36 41.1	1 36 27.8	1 25.6	0 49 42.1	5 32.8	9.8582471	0.2377658	0.2374634
18	68 2 46.6	1 36 35.0	–0 48.0	–0 27 14.1	+5 40.5	9.8579451	0.2371020	0.2366817
22	74 29 20.9	1 36 42.2	–0 7.8	–0 4 23.6	5 43.9	9.8576603	0.2362016	0.2356616
26	80 56 24.2	1 36 49.3	+0 32.8	+0 18 31.8	5 43.0	9.8573965	0.2350629	0.2344049
30	87 23 55.9	1 36 56.4	1 11.8	0 41 14.8	5 37.7	9.8571568	0.2336875	0.2329109
June 3	93 51 55.9	1 37 3.3	1 47.2	1 3 27.7	5 28.0	9.8569445	0.2320741	0.2311768
7	100 20 22.3	1 37 9.8	+2 17.1	+1 24 53.3	+5 14.1	9.8567622	0.2302185	0.2291980
11	106 49 13.6	1 37 15.7	2 40.1	1 45 14.9	4 56.0	9.8566125	0.2281143	0.2269668
15	113 18 27.3	1 37 20.9	2 54.9	2 4 16.5	4 34.1	9.8564972	0.2257545	0.2244776
19	119 48 0.3	1 37 25.3	3 0.9	2 21 43.0	4 8.6	9.8564160	0.2231357	0.2217286
23	126 17 49.2	1 37 28.8	2 57.5	2 37 20.9	3 39.8	9.8563757	0.2202569	0.2187210
27	132 47 49.7	1 37 31.2	+2 45.1	+2 50 57.7	+3 8.1	9.8563709	0.2171210	0.2154571
31	139 17 57.2	1 37 32.3	+2 24.1	+3 2 22.7	+2 34.0	9.8564040	0.2137295	0.2119381

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
July 1	139 17 57.2	1 37 32.3	+2 24.1	+3 2 22.7	+2 34.0	9.8564040	0.2137295	0.2119381
5	145 48 6.5	1 37 32.1	1 55.8	3 11 27.1	1 57.9	9.8564743	0.2100826	0.2081620
9	152 18 12.0	1 37 30.5	1 21.7	3 18 3.8	1 20.2	9.8565809	0.2061759	0.2041231
13	158 48 8.5	1 37 27.5	0 43.3	3 22 7.9	0 41.6	9.8567224	0.2020031	0.1998159
17	165 17 50.1	1 37 23.1	+0 2.8	3 23 36.4	+0 2.6	9.8568969	0.1975605	0.1952374
21	171 47 11.5	1 37 17.4	−0 37.9	+3 22 28.6	−0 36.4	9.8571022	0.1928467	0.1903885
25	178 16 7.4	1 37 10.4	1 16.7	3 18 45.8	1 14.8	9.8573355	0.1878638	0.1852730
29	184 44 32.9	1 37 2.2	1 51.4	3 12 31.5	1 52.1	9.8575939	0.1826161	0.1798932
Aug. 2	191 12 23.9	1 36 53.1	2 20.5	3 3 50.9	2 27.8	9.8578738	0.1771042	0.1742490
6	197 39 36.8	1 36 43.2	2 42.4	2 52 51.3	3 1.5	9.8581718	0.1713268	0.1683368
10	204 6 8.9	1 36 32.8	−2 56.1	+2 39 41.7	−3 32.8	9.8584841	0.1652777	0.1621499
14	210 31 58.2	1 36 21.9	3 1.0	2 24 32.8	4 1.2	9.8588066	0.1589507	0.1556809
18	216 57 3.7	1 36 10.8	2 56.7	2 7 36.5	4 26.4	9.8591352	0.1523404	0.1489289
22	223 21 25.2	1 36 0.0	2 43.6	1 49 6.3	4 48.2	9.8594659	0.1454465	0.1418938
26	229 45 3.8	1 35 49.4	2 22.4	1 29 16.0	5 6.3	9.8597946	0.1382704	0.1345770
30	236 8 0.7	1 35 39.2	−1 54.4	+1 8 21.1	−5 20.5	9.8601171	0.1308128	0.1269776
Sept. 3	242 30 18.3	1 35 29.8	1 20.6	0 46 37.4	5 30.7	9.8604294	0.1230704	0.1190905
7	248 51 59.8	1 35 21.1	0 43.0	0 24 21.1	5 36.8	9.8607277	0.1150356	0.1109043
11	255 13 8.5	1 35 13.4	−0 3.2	+0 1 48.6	5 38.8	9.8610085	0.1066958	0.1024086
15	261 33 48.6	1 35 6.8	+0 36.7	−0 20 43.6	5 36.6	9.8612682	0.0980414	.0.0935928
19	267 54 4.4	1 35 1.3	+1 14.7	−0 42 59.0	−5 30.4	9.8615037	0.0890622	0.0844491
23	274 14 0.6	1 34 57.0	1 49.0	1 4 41.6	5 20.2	9.8617123	0.0797532	0.0749739
27	280 33 41.7	1 34 53.8	2 18.0	1 25 35.7	5 6.2	9.8618914	0.0701102	0.0651612
Oct. 1	286 53 12.3	1 34 51.7	2 40.3	1 45 26.4	4 48.6	9.8620388	0.0601257	0.0550016
5	293 12 36.9	1 34 50.8	2 54.8	2 3 59.5	4 27.4	9.8621528	0.0497865	0.0444782
9	299 31 59.9	1 34 50.9	+3 0.8	−2 21 1.6	−4 3.2	9.8622321	0.0390733	0.0335691
13	305 51 25.2	1 34 51.9	2 58.0	2 36 20.7	3 36.0	9.8622757	0.0279634	0.0222533
17	312 10 56.5	1 34 53.8	2 46.6	2 49 45.6	3 6.1	9.8622832	0.0164364	0.0105111
21	318 30 36.9	1 34 56.5	2 27.1	3 1 6.6	2 34.0	9.8622544	0.0044752	9.9983272
25	324 50 29.4	1 34 59.8	2 0.4	3 10 15.6	2 0.2	9.8621897	9.9920650	9.9856863
29	331 10 36.2	1 35 3.7	+1 28.0	−3 17 5.7	−1 24.7	9.8620897	9.9791888	9.9725702
Nov. 2	337 30 59.9	1 35 8.1	0 51.1	3 21 31.7	0 48.2	9.8619557	9.9658261	9.9589524
6	343 51 41.7	1 35 12.9	+0 11.8	3 23 30.3	−0 11.0	9.8617893	9.9519452	9.9447992
10	350 12 43.3	1 35 18.0	−0 28.2	3 22 59.6	+0 26.4	9.8615925	9.9375096	9.9300720
14	356 34 5.7	1 35 23.3	1 6.8	3 19 59.4	1 3.6	9.8613676	9.9224809	9.9147324
18	2 55 49.9	1 35 28.8	−1 42.1	−3 14 31.6	+1 40.2	9.8611172	9.9068233	9.8987495
22	9 17 56.8	1 35 34.6	2 12.6	3 6 39.8	2 15.6	9.8608444	9.8905077	9.8820933
26	15 40 26.9	1 35 40.5	2 36.4	2 56 29.2	2 49.4	9.8605526	9.8735030	9.8647326
30	22 3 21.1	1 35 46.6	2 52.7	2 44 6.7	3 21.4	9.8602452	9.8557772	9.8466309
Dec. 4	28 26 10.0	1 35 52.9	3 0.4	2 29 41.1	3 51.0	9.8599261	9.8372878	9.8277404
8	34 50 24.1	1 35 59.3	−2 59.1	−2 13 22.7	+4 17.8	9.8595991	9.8179824	9.8080069
12	41 14 34.3	1 36 5.9	2 48.9	1 55 22.7	4 41.5	9.8592684	9.7978074	9.7873783
16	47 39 11.2	1 36 12.7	2 30.3	1 35 55.3	5 1.8	9.8589381	9.7767154	9.7658142
20	54 4 15.7	1 36 19.6	2 4.2	1 15 13.7	5 18.4	9.8586123	9.7546731	9.7432906
24	60 29 46.1	1 36 26.7	1 31.8	0 53 33.7	5 31.0	9.8582952	9.7316650	9.7197975
28	66 55 19.1	1 36 33.9	−0 54.8	−0 31 11.3	+5 39.5	9.8579910	9.7076900	9.6953432
32	73 22 18.9	1 36 41.1	−0 14.9	−0 8 23.5	+5 43.7	9.8577037	9.6827612	9.6699517

MARS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 2	45 8 49.5	33 48.26	− 6.7	−0 6 55.8	+65.39	0.1661198	0.0960249	0.1020173
6	47 23 35.2	33 34.55	− 2.5	−0 2 34.8	65.05	0.1675913	0.1079465	0.1138132
10	49 37 25.9	33 20.85	+ 1.9	+0 1 44.6	64.60	0.1690753	0.1196178	0.1253608
14	51 50 22.0	33 7.15	5.8	0 6 2.0	64.09	0.1705689	0.1310416	0.1366604
18	54 2 23.1	32 53.44	10.0	0 10 17.3	63.46	0.1720701	0.1422161	0.1477084
22	56 13 29.7	32 39.62	+13.9	+0 14 29.7	+62.75	0.1735763	0.1531365	0.1585008
26	58 23 41.8	32 26.22	17.8	0 18 39.3	61.97	0.1750852	0.1638016	0.1690394
30	60 32 59.7	32 12.77	21.6	0 22 45.5	61.10	0.1765947	0.1742153	0.1793296
Feb. 3	62 41 24.2	31 59.47	25.3	0 26 48.1	60.16	0.1781027	0.1843838	0.1893789
7	64 48 55.7	31 46.27	28.8	0 30 46.8	59.16	0.1796067	0.1943151	0.1991929
11	66 55 34.6	31 33.22	+32.0	+0 34 41.4	+58.07	0.1811048	0.2040120	0.2087730
15	69 1 21.7	31 20.30	35.0	0 38 31.5	56.95	0.1825951	0.2134749	0.2181174
19	71 6 17.2	31 7.54	37.9	0 42 17.0	55.77	0.1840758	0.2226998	0.2272219
23	73 10 22.3	30 55.00	40.6	0 45 57.7	54.54	0.1855448	0.2316852	0.2360893
27	75 13 37.5	30 42.65	43.1	0 49 33.3	53.25	0.1870006	0.2404347	0.2447222
Mar. 3	77 16 3.8	30 30.54	+45.3	+0 53 3.7	+51.92	0.1884412	0.2489533	0.2531287
7	79 17 42.1	30 18.67	47.2	0 56 28.7	50.56	0.1898653	0.2572487	0.2613141
11	81 18 33.4	30 6.97	48.9	0 59 48.2	49.17	0.1912710	0.2653249	0.2692809
15	83 18 38.2	29 55.50	50.4	1 3 2.1	47.74	0.1926573	0.2731821	0.2770282
19	85 17 57.7	29 44.29	51.6	1 6 10.1	46.26	0.1940225	0.2808187	0.2845535
23	87 16 32.8	29 33.36	+52.6	+1 9 12.2	+44.77	0.1953653	0.2882326	0.2918569
27	89 14 24.9	29 22.71	53.3	1 12 8.3	43.26	0.1966843	0.2954264	0.2989422
31	91 11 34.8	29 12.31	53.7	1 14 58.4	41.74	0.1979784	0.3024050	0.3058155
Apr. 4	93 8 3.7	29 2.15	53.9	1 17 42.2	40.17	0.1992463	0.3091744	0.3124827
8	95 3 52.3	28 52.27	53.9	1 20 19.8	38.61	0.2004872	0.3157402	0.3189469
12	96 59 2.2	28 42.71	+53.6	+1 22 51.1	+37.03	0.2016996	0.3221026	0.3252071
16	98 53 34.3	28 33.37	53.1	1 25 16.0	35.44	0.2028830	0.3282605	0.3312622
20	100 47 29.6	28 24.35	52.3	1 27 34.6	33.83	0.2040361	0.3342122	0.3371111
24	102 40 49.5	28 15.62	51.2	1 29 46.6	32.24	0.2051582	0.3399592	0.3427572
28	104 33 35.0	28 7.19	49.9	1 31 52.3	30.60	0.2062485	0.3455056	0.3482052
May 2	106 25 47.4	27 59.00	+48.6	+1 33 51.4	+28.95	0.2073059	0.3508569	0.3534609
6	108 17 27.6	27 51.19	47.1	1 35 43.9	27.31	0.2083300	0.3560176	0.3585271
10	110 8 37.3	27 43.66	45.3	1 37 29.9	25.69	0.2093198	0.3609892	0.3634040
14	111 59 17.3	27 36.40	43.3	1 39 9.4	24.06	0.2102750	0.3657708	0.3680897
18	113 49 28.9	27 29.46	41.2	1 40 42.4	22.42	0.2111947	0.3703606	0.3725834
22	115 39 13.4	27 22.82	+38.8	+1 42 8.8	+20.79	0.2120786	0.3747588	0.3768865
26	117 28 31.9	27 16.42	36.3	1 43 28.7	19.15	0.2129257	0.3789680	0.3810039
30	119 17 25.2	27 10.34	33.8	1 44 42.0	17.51	0.2137359	0.3829938	0.3849393
June 3	121 5 55.0	27 4.62	31.1	1 45 48.8	15.88	0.2145087	0.3868400	0.3886965
7	122 54 2.6	26 59.16	28.3	1 46 49.0	14.26	0.2152435	0.3905082	0.3922756
11	124 41 48.7	26 53.96	+25.3	+1 47 42.8	+12.63	0.2159399	0.3939976	0.3956745
15	126 29 14.9	26 49.12	22.3	1 48 30.0	11.00	0.2165975	0.3973059	0.3988918
19	128 16 22.1	26 44.56	19.2	1 49 10.8	9.40	0.2172162	0.4004322	0.4019276
23	130 3 11.8	26 40.30	16.0	1 49 45.2	7.78	0.2177954	0.4033784	0.4047852
27	131 49 44.9	26 36.35	12.8	1 50 13.2	6.19	0.2183349	0.4061486	0.4074691
July 1	133 36 3.0	26 32.74	+ 9.6	+1 50 34.7	+ 4.59	0.2188346	0.4087465	0.4099812
5	135 22 7.2	26 29.37	+ 6.3	+1 50 49.9	+ 3.01	0.2192938	0.4111735	0.4123229

MARS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
July 1	133 36 3.0	26 32.74	+ 9.6	+1 50 34.7	+ 4.59	0.2188346	0.4087465	0.4099812
5	135 22 7.2	26 29.37	6.3	1 50 49.9	3.01	0.2192938	0.4111735	0.4123229
9	137 7 58.4	26 26.30	+ 3.0	1 50 58.8	+ 1.43	0.2197126	0.4134289	0.4144913
13	138 53 38.0	26 23.54	− 0.3	1 51 1.3	− 0.15	0.2200908	0.4155095	0.4164837
17	140 39 7.1	26 21.05	3.6	1 50 57.6	1.71	0.2204282	0.4174140	0.4183004
21	142 24 26.8	26 18.90	− 6.9	+1 50 47.6	− 3.26	0.2207245	0.4191431	0.4199424
25	144 9 38.7	26 17.04	10.2	1 50 31.5	4.82	0.2209798	0.4206992	0.4214141
29	145 54 43.5	26 15.45	13.7	1 50 9.0	6.36	0.2211938	0.4220866	0.4227172
Aug. 2	147 39 42.7	26 14.21	16.5	1 49 40.6	7.88	0.2213665	0.4233060	0.4238526
6	149 24 37.6	26 13.26	19.6	1 49 6.0	9.41	0.2214979	0.4243565	0.4248174
10	151 9 29.2	26 12.59	−22.6	+1 48 25.3	−10.92	0.2215877	0.4252351	0.4256088
14	152 54 18.7	26 12.21	25.6	1 47 38.6	12.42	0.2216361	0.4259391	0.4262254
18	154 39 7.3	26 12.12	28.5	1 46 45.9	13.91	0.2216430	0.4264682	0.4266676
22	156 23 56.1	26 12.32	31.2	1 45 47.3	15.39	0.2216084	0.4268246	0.4269387
26	158 8 46.3	26 12.82	33.8	1 44 42.8	16.86	0.2215319	0.4270108	0.4270407
30	159 53 39.1	26 13.66	−36.2	+1 43 32.4	−18.34	0.2214143	0.4270285	0.4269739
Sept. 3	161 38 36.0	26 14.81	38.6	1 42 16.1	19.80	0.2212551	0.4268765	0.4267361
7	163 23 38.0	26 16.24	40.8	1 40 54.0	21.24	0.2210547	0.4265517	0.4263234
11	165 8 46.3	26 17.94	42.9	1 39 26.2	22.66	0.2208130	0.4260507	0.4257337
15	166 54 2.0	26 19.96	44.9	1 37 52.7	24.07	0.2205302	0.4253724	0.4249669
19	168 39 26.4	26 22.29	−46.7	+1 36 13.6	−25.47	0.2202064	0.4245178	0.4240255
23	170 25 0.7	26 24.86	48.1	1 34 28.9	26.87	0.2198417	0.4234897	0.4229112
27	172 10 45.7	26 27.77	49.5	1 32 38.6	28.25	0.2194362	0.4222898	0.4216251
Oct. 1	173 56 43.3	26 31.04	50.6	1 30 42.9	29.61	0.2189903	0.4209168	0.4201647
5	175 42 54.4	26 34.57	51.8	1 28 41.7	30.97	0.2185043	0.4193681	0.4185265
9	177 29 20.2	26 38.36	−52.7	+1 26 35.1	−32.30	0.2179781	0.4176397	0.4167073
13	179 16 1.7	26 42.45	53.3	1 24 23.3	33.61	0.2174121	0.4157296	0.4147065
17	181 3 0.4	26 46.91	53.7	1 22 6.2	34.92	0.2168068	0.4136390	0.4125268
21	182 50 17.4	26 51.62	53.9	1 19 43.9	36.21	0.2161623	0.4113703	0.4101698
25	184 37 53.8	26 56.66	53.9	1 17 16.5	37.49	0.2154790	0.4089253	0.4076369
29	186 25 50.9	27 1.96	−53.7	+1 14 44.0	−38.74	0.2147573	0.4063043	0.4049267
Nov. 2	188 14 9.9	27 7.60	53.3	1 12 6.6	39.96	0.2139976	0.4035038	0.4020351
6	190 2 52.1	27 13.54	52.7	1 9 24.3	41.17	0.2132002	0.4005204	0.3989596
10	191 51 58.7	27 19.79	51.7	1 6 37.2	42.36	0.2123657	0.3973526	0.3956990
14	193 41 30.8	27 26.31	50.6	1 3 45.4	43.53	0.2114945	0.3940002	0.3922559
18	195 31 29.6	27 33.16	−49.3	+1 0 49.0	−44.69	0.2105872	0.3904665	0.3886326
22	197 21 56.5	27 40.34	47.9	0 57 48.1	45.80	0.2096445	0.3867544	0.3848316
26	199 12 52.7	27 47.79	46.3	0 54 42.8	46.87	0.2086668	0.3828646	0.3808523
30	201 4 19.2	27 55.52	44.3	0 51 33.1	47.92	0.2076547	0.3787950	0.3766919
Dec. 4	202 56 17.3	28 3.55	42.3	0 48 19.4	48.95	0.2066089	0.3745427	0.3723474
8	204 48 48.0	28 11.89	−39.9	+0 45 1.5	−49.95	0.2055306	0.3701055	0.3678176
12	206 41 52.8	28 20.56	37.5	0 41 39.8	50.91	0.2044194	0.3654842	0.3631053
16	208 35 32.9	28 29.49	34.8	0 38 14.2	51.84	0.2032773	0.3606821	0.3582154
20	210 29 49.1	28 38.69	32.1	0 34 45.1	52.71	0.2021060	0.3557045	0.3531501
24	212 24 42.8	28 48.16	29.1	0 31 12.5	53.59	0.2009044	0.3505523	0.3479105
28	214 20 14.8	28 57.92	−25.9	+0 27 36.4	−54.38	0.1996741	0.3452249	0.3424949
32	216 16 26.6	29 8.00	−22.7	+0 23 57.5	−55.11	0.1984164	0.3397200	

JUPITER.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 2	27 22 52.4	5 29.47	−16.0	−1 14 41.0	+2.34	0.6951499	0.6809677	0.6838528
6	27 44 50.2	5 29.42	16.3	1 14 31.6	2.39	0.6951837	0.6867221	0.6895728
10	28 6 47.8	5 29.37	16.6	1 14 21.9	2.43	0.6952182	0.6924026	0.6952088
14	28 28 45.1	5 29.31	16.8	1 14 12.1	2.48	0.6952534	0.6979891	0.7007412
18	28 50 42.3	5 29.25	17.1	1 14 2.1	2.52	0.6952895	0.7034626	0.7061508
22	29 12 39.2	5 29.19	−17.4	−1 13 51.9	+2.56	0.6953263	0.7088041	0.7114202
26	29 34 35.8	5 29.14	17.6	1 13 41.5	2.61	0.6953639	0.7139978	0.7165352
30	29 56 32.3	5 29.08	17.9	1 13 31.0	2.66	0.6954023	0.7190311	0.7214842
Feb. 3	30 18 28.5	5 29.02	18.1	1 13 20.3	2.70	0.6954415	0.7238935	0.7262581
7	30 40 24.4	5 28.96	18.4	1 13 9.4	2.75	0.6954814	0.7285768	0.7308486
11	31 2 20.2	5 28.90	−18.7	−1 12 58.3	+2.79	0.6955222	0.7330724	0.7352469
15	31 24 15.7	5 28.84	18.9	1 12 47.1	2.83	0.6955637	0.7373710	0.7394436
19	31 46 10.9	5 28.77	19.2	1 12 35.7	2.87	0.6956061	0.7414640	0.7434314
23	32 8 5.8	5 28.70	19.4	1 12 24.1	2.91	0.6956493	0.7453463	0.7472049
27	32 30 0.5	5 28.63	19.6	1 12 12.4	2.96	0.6956933	0.7490100	0.7507602
Mar. 3	32 51 54.9	5 28.56	−19.9	−1 12 0.4	+3.00	0.6957380	0.7524554	0.7540952
7	33 13 49.0	5 28.49	20.1	1 11 48.3	3.04	0.6957835	0.7556794	0.7572076
11	33 35 42.9	5 28.42	20.3	1 11 36.1	3.08	0.6958298	0.7586793	0.7600941
15	33 57 36.4	5 28.35	20.6	1 11 23.7	3.13	0.6958768	0.7614517	0.7627515
19	34 19 29.7	5 28.28	20.8	1 11 11.1	3.17	0.6959246	0.7639932	0.7651765
23	34 41 22.7	5 28.22	−21.0	−1 10 58.3	+3.21	0.6959731	0.7663014	0.7673676
27	35 3 15.4	5 28.14	21.2	1 10 45.4	3.26	0.6960224	0.7683754	0.7693250
31	35 25 7.8	5 28.06	21.4	1 10 32.3	3.30	0.6960723	0.7702165	0.7710501
Apr. 4	35 46 59.9	5 27.98	21.6	1 10 19.0	3.34	0.6961229	0.7718256	0.7725428
8	36 8 51.6	5 27.90	21.8	1 10 5.6	3.38	0.6961743	0.7732018	0.7738025
12	36 30 43.1	5 27.82	−22.0	−1 9 52.0	+3.42	0.6962264	0.7743448	0.7748283
16	36 52 34.2	5 27.74	22.2	1 9 38.2	3.46	0.6962793	0.7752530	0.7756188
20	37 14 25.0	5 27.66	22.4	1 9 24.2	3.50	0.6963329	0.7759259	0.7761744
24	37 36 15.5	5 27.58	22.6	1 9 10.1	3.55	0.6963872	0.7763646	0.7764968
28	37 58 5.6	5 27.49	22.8	1 8 55.9	3.59	0.6964423	0.7765712	0.7765882
May 2	38 19 55.4	5 27.41	−23.0	−1 8 41.4	+3.63	0.6964981	0.7765478	0.7764500
6	38 41 44.9	5 27.33	23.2	1 8 26.8	3.67	0.6965547	0.7762950	0.7760828
10	39 3 34.1	5 27.24	23.4	1 8 12.1	3.71	0.6966122	0.7758132	0.7754861
14	39 25 22.9	5 27.15	23.5	1 7 57.2	3.75	0.6966703	0.7751016	0.7746596
18	39 47 11.3	5 27.06	23.7	1 7 42.1	3.79	0.6967292	0.7741606	0.7736047
22	40 8 59.3	5 26.96	−23.8	−1 7 26.9	+3.83	0.6967888	0.7729922	0.7723236
26	40 30 47.0	5 26.87	24.0	1 7 11.5	3.87	0.6968491	0.7715991	0.7708193
30	40 52 34.3	5 26.78	24.2	1 6 55.9	3.91	0.6969102	0.7699842	0.7690941
June 3	41 14 21.2	5 26.69	24.3	1 6 40.2	3.95	0.6969719	0.7681490	0.7671492
7	41 36 7.8	5 26.59	24.5	1 6 24.3	3.99	0.6970344	0.7660945	0.7649850
11	41 57 54.0	5 26.50	−24.6	−1 6 8.3	+4.02	0.6970975	0.7638208	0.7626021
15	42 19 39.8	5 26.41	24.8	1 5 52.1	4.06	0.6971614	0.7613295	0.7600033
19	42 41 25.2	5 26.31	24.9	1 5 35.8	4.10	0.6972258	0.7586240	0.7571919
23	43 3 10.3	5 26.20	25.1	1 5 19.3	4.14	0.6972909	0.7557078	0.7541724
27	43 24 54.9	5 26.10	25.2	1 5 2.7	4.18	0.6973567	0.7525861	0.7509493
July 1	43 46 39.1	5 26.00	−25.3	−1 4 45.9	+4.21	0.6974231	0.7492692	0.7475251
5	44 8 22.9	5 25.90	−25.4	−1 4 20.0	+4.25	0.6974903	0.7457385	0.7439026

JUPITER.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
July 1	43 46 39.1	5 26.00	−25.3	−1 4 45.9	+4.21	0.6974231	0.7492622	0.7475251
5	44 8 22.9	5 25.90	25.4	1 4 29.0	4.25	0.6974903	0.7457385	0.7439026
9	44 30 6.3	5 25.79	25.5	1 4 11.9	4.29	0.6975581	0.7420180	0.7400852
13	44 51 49.2	5 25.69	25.7	1 3 54.7	4.33	0.6976266	0.7381050	0.7360782
17	45 13 31.8	5 25.59	25.8	1 3 37.3	4.36	0.6976957	0.7340058	0.7318888
21	45 35 13.9	5 25.49	−25.9	−1 3 19.8	+4.40	0.6977656	0.7297284	0.7275256
25	45 56 55.7	5 25.38	26.0	1 3 2.1	4.44	0.6978361	0.7252813	0.7229967
29	46 18 37.0	5 25.27	26.1	1 2 44.3	4.47	0.6979074	0.7206726	0.7183101
Aug. 2	46 40 17.9	5 25.16	26.2	1 2 26.3	4.51	0.6979794	0.7159101	0.7134737
6	47 1 58.3	5 25.05	26.3	1 2 8.2	4.54	0.6980520	0.7110024	0.7084973
10	47 23 38.3	5 24.94	−26.3	−1 1 50.0	+4.57	0.6981252	0.7059603	0.7033931
14	47 45 17.8	5 24.83	26.4	1 1 31.6	4.61	0.6981991	0.7007977	0.6981762
18	48 6 56.9	5 24.72	26.5	1 1 13.1	4.65	0.6982737	0.6955309	0.6928639
22	48 28 35.6	5 24.60	26.6	1 0 54.5	4.68	0.6983488	0.6901774	0.6874737
26	48 50 13.8	5 24.49	26.6	1 0 35.7	4.72	0.6984247	0.6847551	0.6820235
30	49 11 51.5	5 24.38	−26.7	−1 0 16.7	+4.75	0.6985012	0.6792818	0.6765323
Sept. 3	49 33 28.8	5 24.27	26.8	0 59 57.7	4.79	0.6985783	0.6737780	0.6710216
7	49 55 5.6	5 24.15	26.8	0 59 38.5	4.82	0.6986559	0.6682666	0.6655162
11	50 16 42.0	5 24.03	26.9	0 59 19.1	4.85	0.6987342	0.6627745	0.6600453
15	50 38 17.8	5 23.91	26.9	0 58 59.6	4.89	0.6988130	0.6573325	0.6546401
19	50 59 53.2	5 23.78	−26.9	−0 58 40.0	+4.92	0.6988925	0.6519719	0.6493319
23	51 21 28.1	5 23.66	27.0	0 58 20.3	4.95	0.6989726	0.6467243	0.6441531
27	51 43 2.5	5 23.54	27.0	0 58 0.4	4.98	0.6990532	0.6416224	0.6391362
Oct. 1	52 4 36.4	5 23.42	27.0	0 57 40.4	5.02	0.6991345	0.6366994	0.6343165
5	52 26 9.9	5 23.30	27.1	0 57 20.3	5.05	0.6992164	0.6319925	0.6297324
9	52 47 42.8	5 23.18	−27.1	−0 57 0.0	+5.08	0.6992990	0.6275411	0.6254238
13	53 9 15.3	5 23.06	27.1	0 56 39.6	5.11	0.6993821	0.6233854	0.6214312
17	53 30 47.3	5 22.93	27.1	0 56 19.1	5.14	0.6994659	0.6195652	0.6177920
21	53 52 18.7	5 22.80	27.1	0 55 58.5	5.17	0.6995504	0.6161158	0.6145409
25	54 13 49.6	5 22.67	27.1	0 55 37.7	5.20	0.6996354	0.6130711	0.6117102
29	54 35 20.1	5 22.54	−27.1	−0 55 16.9	+5.23	0.6997210	0.6104619	0.6093301
Nov. 2	54 56 50.0	5 22.41	27.1	0 54 55.9	5.26	0.6998071	0.6083180	0.6074293
6	55 18 19.3	5 22.28	27.1	0 54 34.8	5.29	0.6998938	0.6066667	0.6060335
10	55 39 48.2	5 22.15	27.1	0 54 13.5	5.32	0.6999811	0.6055312	0.6051623
14	56 1 16.6	5 22.02	27.1	0 53 52.1	5.35	0.7000690	0.6049274	0.6048279
18	56 22 44.4	5 21.89	−27.1	−0 53 30.7	+5.38	0.7001575	0.6048635	0.6050344
22	56 44 11.7	5 21.76	27.0	0 53 9.1	5.41	0.7002465	0.6053398	0.6057794
26	57 5 38.5	5 21.63	27.0	0 52 47.4	5.44	0.7003360	0.6063519	0.6070564
30	57 27 4.7	5 21.49	27.0	0 52 25.6	5.47	0.7004260	0.6078910	0.6088546
Dec. 4	57 48 30.4	5 21.35	26.9	0 52 3.6	5.50	0.7005166	0.6099448	0.6111580
8	58 9 55.5	5 21.21	−26.9	−0 51 41.6	+5.52	0.7006077	0.6124922	0.6139440
12	58 31 20.1	5 21.08	26.9	0 51 19.4	5.55	0.7006993	0.6155092	0.6171839
16	58 52 44.1	5 20.94	26.8	0 50 57.2	5.58	0.7007915	0.6189633	0.6208431
20	59 14 7.6	5 20.80	26.7	0 50 34.8	5.61	0.7008841	0.6228186	0.6248849
24	59 35 30.6	5 20.67	26.7	0 50 12.3	5.63	0.7009773	0.6270376	0.6292719
28	59 56 53.0	5 20.53	−26.6	−0 49 49.7	+5.66	0.7010710	0.6315834	0.6339676
32	60 18 14.8	5 20.39	−26.6	−0 49 27.0	+5.69	0.7011653	0.6364194	

SATURN.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 2	186 35 0.5	1 59.93	+52.1	+2 23 35.9	+1.45	0.9803627	0.9781300	0.9766116
6	186 43 0.1	1 59.89	51.7	2 23 41.6	1.44	0.9804179	0.9750895	0.9735652
10	186 50 59.6	1 59.86	51.3	2 23 47.4	1.42	0.9804730	0.9720408	0.9705181
14	186 58 59.0	1 59.83	50.9	2 23 53.0	1.41	0.9805281	0.9689992	0.9674859
18	187 6 58.2	1 59.80	50.5	2 23 58.7	1.40	0.9805832	0.9659806	0.9644854
22	187 14 57.3	1 59.77	+50.2	+2 24 4.2	+1.39	0.9806383	0.9630024	0.9615338
26	187 22 56.3	1 59.74	49.8	2 24 9.8	1.38	0.9806933	0.9600817	0.9586481
30	187 30 55.2	1 59.71	49.4	2 24 15.3	1.36	0.9807483	0.9572351	0.9558446
Feb. 3	187 38 54.0	1 59.68	49.0	2 24 20.7	1.35	0.9808033	0.9544786	0.9531392
7	187 46 52.7	1 59.65	48.6	2 24 26.1	1.34	0.9808583	0.9518285	0.9505484
11	187 54 51.2	1 59.62	+48.2	+2 24 31.4	+1.33	0.9809133	0.9493011	0.9480891
15	188 2 49.6	1 59.59	47.8	2 24 36.7	1.32	0.9809682	0.9469142	0.9457786
19	188 10 47.9	1 59.56	47.4	2 24 41.9	1.31	0.9810231	0.9446844	0.9436337
23	188 18 46.1	1 59.53	47.0	2 24 47.1	1.29	0.9810779	0.9426289	0.9416692
27	188 26 44.1	1 59.50	46.6	2 24 52.3	1.28	0.9811328	0.9407587	0.9398982
Mar. 3	188 34 42.1	1 59.47	+46.2	+2 24 57.4	+1.27	0.9811877	0.9390889	0.9383324
7	188 42 39.9	1 59.44	45.8	2 25 2.4	1.26	0.9812425	0.9376299	0.9369827
11	188 50 37.6	1 59.41	45.4	2 25 7.4	1.25	0.9812973	0.9363922	0.9358597
15	188 58 35.2	1 59.38	45.0	2 25 12.4	1.23	0.9813521	0.9353862	0.9349727
19	189 6 32.7	1 59.35	44.6	2 25 17.3	1.22	0.9814069	0.9346199	0.9343288
23	189 14 30.0	1 59.32	+44.2	+2 25 22.2	+1.21	0.9814617	0.9340994	0.9339324
27	189 22 27.3	1 59.29	43.8	2 25 27.0	1.20	0.9815165	0.9338275	0.9337850
31	189 30 24.4	1 59.26	43.4	2 25 31.8	1.19	0.9815712	0.9338046	0.9338864
Apr. 4	189 38 21.4	1 59.23	43.0	2 25 36.5	1.17	0.9816259	0.9340300	0.9342350
8	189 46 18.2	1 59.91	42.6	2 25 41.1	1.16	0.9816806	0.9345012	0.9348282
12	189 54 15.0	1 59.18	+42.2	+2 25 45.8	+1.15	0.9817352	0.9352154	0.9356622
16	190 2 11.7	1 59.15	41.8	2 25 50.3	1.14	0.9817898	0.9361675	0.9367306
20	190 10 8.2	1 59.12	41.4	2 25 54.8	1.12	0.9818444	0.9373499	0.9380245
24	190 18 4.6	1 59.09	41.0	2 25 59.3	1.11	0.9818990	0.9387527	0.9395328
28	190 26 0.9	1 59.06	40.6	2 26 3.7	1.10	0.9819535	0.9403635	0.9412432
May 2	190 33 57.0	1 59.03	+40.2	+2 26 8.1	+1.09	0.9820080	0.9421704	0.9431436
6	190 41 53.1	1 59.00	39.7	2 26 12.4	1.08	0.9820625	0.9441610	0.9452211
10	190 49 49.0	1 58.97	39.3	2 26 16.7	1.07	0.9821170	0.9463222	0.9474625
14	190 57 44.9	1 58.94	38.9	2 26 21.0	1.05	0.9821715	0.9486403	0.9498537
18	191 5 40.6	1 58.91	38.5	2 26 25.2	1.04	0.9822259	0.9511005	0.9523786
22	191 13 36.2	1 58.89	+38.1	+2 26 29.3	+1.03	0.9822803	0.9536860	0.9550206
26	191 21 31.7	1 58.86	37.7	2 26 33.4	1.02	0.9823347	0.9563805	0.9577635
30	191 29 27.0	1 58.83	37.3	2 26 37.4	1.01	0.9823891	0.9591679	0.9605918
June 3	191 37 22.3	1 58.80	36.9	2 26 41.4	0.99	0.9824434	0.9620335	0.9634911
7	191 45 17.4	1 58.77	36.4	2 26 45.4	0.98	0.9824977	0.9649628	0.9664466
11	191 53 12.4	1 58.74	+36.0	+2 26 49.3	+0.97	0.9825520	0.9679413	0.9694445
15	192 1 7.3	1 58.71	35.6	2 26 53.2	0.96	0.9826062	0.9709544	0.9724692
19	192 9 2.1	1 58.68	35.2	2 26 57.0	0.95	0.9826604	0.9739870	0.9755059
23	192 16 56.7	1 58.65	34.8	2 27 0.7	0.93	0.9827146	0.9770244	0.9785409
27	192 24 51.3	1 58.63	34.3	2 27 4.4	0.92	0.9827688	0.9800538	0.9815616
July 1	192 32 45.8	1 58.60	+33.9	+2 27 8.1	+0.91	0.9828230	0.9830629	0.9845562
5	192 40 40.1	1 58.57	+33.5	+2 27 11.7	+0.90	0.9828771	0.9860403	0.9875142

SATURN.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
July 1	192 32 45.8	1 58.60	+33.9	+2 27 8.1	+0.91	0.9828230	0.9830629	0.9845562
5	192 40 40.1	1 58.57	33.5	2 27 11.7	0.90	0.9828771	0.9860403	0.9875142
9	192 48 34.3	1 58.54	33.1	2 27 15.3	0.89	0.9829312	0.9889763	0.9904251
13	192 56 28.4	1 58.51	32.7	2 27 18.8	0.88	0.9829853	0.9918593	0.9932773
17	193 4 22.4	1 58.48	32.2	2 27 22.3	0.86	0.9830393	0.9946780	0.9960602
21	193 12 16.2	1 58.45	+31.8	+2 27 25.7	+0.85	0.9830933	0.9974227	0.9987644
25	193 20 10.0	1 58.42	31.4	2 27 29.1	0.84	0.9831473	1.0000844	1.0013816
29	193 28 3.6	1 58.39	31.0	2 27 32.4	0.83	0.9832012	1.0026553	1.0039046
Aug. 2	193 35 57.1	1 58.36	30.5	2 27 35.7	0.82	0.9832551	1.0051288	1.0063269
6	193 43 50.5	1 58.33	30.1	2 27 39.0	0.80	0.9833090	1.0074979	1.0086410
10	193 51 43.7	1 58.31	+29.7	+2 27 42.2	+0.79	0.9833629	1.0097553	1.0108399
14	193 59 36.9	1 58.28	29.3	2 27 45.3	0.78	0.9834167	1.0118943	1.0129171
18	194 7 30.0	1 58.25	28.8	2 27 48.4	0.77	0.9834705	1.0139079	1.0148662
22	194 15 22.9	1 58.23	28.4	2 27 51.4	0.76	0.9835243	1.0157914	1.0166829
26	194 23 15.8	1 58.20	28.0	2 27 54.4	0.74	0.9835780	1.0175404	1.0183633
30	194 31 8.5	1 58.17	+27.6	+2 27 57.4	+0.73	0.9836317	1.0191513	1.0199039
Sept. 3	194 39 1.1	1 58.14	27.1	2 28 0.3	0.72	0.9836853	1.0206204	1.0213003
7	194 46 53.6	1 58.11	26.7	2 28 3.2	0.71	0.9837389	1.0219431	1.0225485
11	194 54 46.0	1 58.08	26.3	2 28 6.0	0.70	0.9837925	1.0231158	1.0236444
15	195 2 38.2	1 58.05	25.8	2 28 8.8	0.69	0.9838460	1.0241343	1.0245851
19	195 10 30.4	1 58.02	+25.4	+2 28 11.5	+0.67	0.9838995	1.0249966	1.0253686
23	195 18 22.4	1 57.99	25.0	2 28 14.1	0.66	0.9839530	1.0257011	1.0259938
27	195 26 14.3	1 57.97	24.6	2 28 16.8	0.65	0.9840065	1.0262466	1.0264593
Oct. 1	195 34 6.1	1 57.94	24.1	2 28 19.3	0.64	0.9840599	1.0266317	1.0267634
5	195 41 57.8	1 57.91	23.7	2 28 21.9	0.63	0.9841132	1.0268543	1.0269041
9	195 49 49.4	1 57.88	+23.3	+2 28 24.4	+0.62	0.9841665	1.0269128	1.0268803
13	195 57 40.8	1 57.85	22.8	2 28 26.8	0.60	0.9842198	1.0268065	1.0266913
17	196 5 32.2	1 57.82	22.4	2 28 29.2	0.59	0.9842731	1.0265349	1.0263375
21	196 13 23.4	1 57.80	22.0	2 28 31.5	0.58	0.9843263	1.0260993	1.0258203
25	196 21 14.6	1 57.77	21.5	2 28 33.8	0.57	0.9843795	1.0255008	1.0251409
29	196 29 5.6	1 57.74	+21.1	+2 28 36.1	+0.56	0.9844327	1.0247406	1.0243000
Nov. 2	196 36 56.5	1 57.71	20.7	2 28 38.3	0.54	0.9844858	1.0238192	1.0232985
6	196 44 47.3	1 57.68	20.2	2 28 40.4	0.53	0.9845389	1.0227381	1.0221380
10	196 52 37.9	1 57.65	19.8	2 28 42.5	0.52	0.9845920	1.0214986	1.0208204
14	197 0 28.5	1 57.63	19.4	2 28 44.6	0.51	0.9846450	1.0201039	1.0193497
18	197 8 18.9	1 57.60	+18.9	+2 28 46.6	+0.50	0.9846980	1.0185582	1.0177301
22	197 16 9.3	1 57.57	18.5	2 28 48.6	0.49	0.9847509	1.0168660	1.0159664
26	197 23 59.5	1 57.54	18.0	2 28 50.5	0.47	0.9848038	1.0150318	1.0140627
30	197 31 49.6	1 57.51	17.6	2 28 52.4	0.46	0.9848566	1.0130596	1.0120231
Dec. 4	197 39 39.6	1 57.49	17.2	2 28 54.2	0.45	0.9849094	1.0109539	1.0098529
8	197 47 29.5	1 57.46	+16.7	+2 28 56.0	+0.44	0.9849622	1.0087209	1.0075589
12	197 55 19.3	1 57.43	16.3	2 28 57.7	0.43	0.9850150	1.0063678	1.0051487
16	198 3 8.9	1 57.41	15.9	2 28 59.4	0.41	0.9850678	1.0039028	1.0026313
20	198 10 58.5	1 57.38	15.4	2 29 1.0	0.40	0.9851205	1.0013351	1.0000154
24	198 18 48.0	1 57.35	15.0	2 29 2.6	0.39	0.9851732	0.9986733	0.9973099
28	198 26 37.3	1 57.32	+14.6	+2 29 4.2	+0.38	0.9852258	0.9959264	0.9945239
32	198 34 26.6	1 57.29	+14.1	+2 29 5.7	+0.37	0.9852784	0.9931038	

URANUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	″	″	° ′ ″	″			
Jan. 6	217 17 50.9	45.16	−8.9	+0 27 23.8	−0.49	1.2686149	1.2772312	1.2757700
14	217 23 52.1	45.15	8.9	0 27 19.8	0.49	1.2686409	1.2742671	1.2727290
22	217 29 53.4	45.15	8.9	0 27 15.9	0.49	1.2686670	1.2711631	1.2695773
30	217 35 54.5	45.14	8.9	0 27 12.0	0.49	1.2686931	1.2679791	1.2663757
Feb. 7	217 41 55.6	45.14	8.9	0 27 8.0	0.49	1.2687193	1.2647744	1.2631829
15	217 47 56.7	45.13	−8.9	+0 27 4.1	−0.49	1.2687456	1.2616095	1.2600627
23	217 53 57.8	45.13	8.9	0 27 0.1	0.49	1.2687719	1.2585511	1.2570826
Mar. 3	217 59 58.8	45.12	8.9	0 26 56.2	0.49	1.2687982	1.2556647	1.2543049
11	218 5 59.7	45.11	8.8	0 26 52.2	0.50	1.2688246	1.2530100	1.2517879
19	218 12 0.6	45.11	8.8	0 26 48.2	0.50	1.2688511	1.2506456	1.2495901
27	218 18 1.5	45.10	−8.8	+0 26 44.3	−0.50	1.2688776	1.2486274	1.2477624
Apr. 4	218 24 2.3	45.10	8.8	0 26 40.3	0.50	1.2689041	1.2469993	1.2463427
12	218 30 3.1	45.09	8.8	0 26 36.3	0.50	1.2689307	1.2457964	1.2453641
20	218 36 3.8	45.09	8.8	0 26 32.3	0.50	1.2689573	1.2450483	1.2448506
28	218 42 4.5	45.08	8.8	0 26 28.3	0.50	1.2689840	1.2447713	1.2448103
May 6	218 48 5.1	45.08	−8.8	+0 26 24.3	−0.50	1.2690107	1.2449670	1.2452404
14	218 54 5.7	45.07	8.8	0 26 20.3	0.50	1.2690375	1.2456292	1.2461312
22	219 0 6.2	45.06	8.8	0 26 16.3	0.50	1.2690643	1.2467427	1.2474595
30	219 6 6.7	45.06	8.7	0 26 12.3	0.50	1.2690911	1.2482770	1.2491902
June 7	219 12 7.2	45.05	8.7	0 26 8.3	0.50	1.2691181	1.2501941	1.2512836
15	219 18 7.6	45.05	−8.7	+0 26 4.3	−0.50	1.2691450	1.2524528	1.2536948
23	219 24 8.0	45.04	8.7	0 26 0.3	0.50	1.2691721	1.2550029	1.2563695
July 1	219 30 8.3	45.04	8.7	0 25 56.3	0.50	1.2691992	1.2577873	1.2592502
9	219 36 8.6	45.03	8.7	0 25 52.3	0.50	1.2692263	1.2607514	1.2622830
17	219 42 8.8	45.03	8.7	0 25 48.2	0.50	1.2692534	1.2638382	1.2654086
25	219 48 9.0	45.02	−8.7	+0 25 44.2	−0.50	1.2692807	1.2669872	1.2685671
Aug. 2	219 54 9.2	45.02	8.6	0 25 40.2	0.51	1.2693079	1.2701416	1.2717046
10	220 0 9.3	45.01	8.6	0 25 36.1	0.51	1.2693352	1.2732492	1.2747689
18	220 6 9.3	45.00	8.6	0 25 32.1	0.51	1.2693626	1.2762570	1.2777071
26	220 12 9.4	45.00	8.6	0 25 28.0	0.51	1.2693900	1.2791138	1.2804722
Sept. 3	220 18 9.3	44.99	−8.6	+0 25 24.0	−0.51	1.2694174	1.2817772	1.2830241
11	220 24 9.3	44.99	8.6	0 25 19.9	0.51	1.2694449	1.2842074	1.2853224
19	220 30 9.1	44.98	8.6	0 25 15.8	0.51	1.2694725	1.2863646	1.2873306
27	220 36 9.0	44.98	8.5	0 25 11.8	0.51	1.2695000	1.2882173	1.2890216
Oct. 5	220 42 8.8	44.97	8.5	0 25 7.7	0.51	1.2695277	1.2897403	1.2903702
13	220 48 8.5	44.97	−8.5	+0 25 3.6	−0.51	1.2695554	1.2909089	1.2913539
21	220 54 8.3	44.96	8.5	0 24 59.5	0.51	1.2695831	1.2917039	1.2919579
29	221 0 7.9	44.96	8.5	0 24 55.5	0.51	1.2696109	1.2921150	1.2921742
Nov. 6	221 6 7.6	44.95	8.5	0 24 51.4	0.51	1.2696388	1.2921344	1.2919955
14	221 12 7.1	44.94	8.5	0 24 47.3	0.51	1.2696666	1.2917577	1.2914218
22	221 18 6.7	44.94	−8.4	+0 24 43.2	−0.51	1.2696946	1.2909892	1.2904612
30	221 24 6.2	44.93	8.4	0 24 39.1	0.51	1.2697225	1.2898397	1.2891260
Dec. 8	221 30 5.6	44.93	8.4	0 24 35.0	0.51	1.2697505	1.2883223	1.2874316
16	221 36 5.0	44.92	8.4	0 24 30.9	0.51	1.2697786	1.2864574	1.2854040
24	221 42 4.4	44.92	8.4	0 24 26.8	0.51	1.2698067	1.2842752	1.2830754
32	221 48 3.7	44.91	−8.4	+0 24 22.7	−0.51	1.2698348	1.2818085	
40	221 54 3.0	44.91	−8.4	+0 24 18.5	−0.52	1.2698630		

NEPTUNE.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	″	″	° ′ ″	″			
Jan. 6	70 7 0.2	22.04	−42.7	−1 32 56.1	+0.34	1.4748374	1.4632488	1.4639092
14	70 9 56.5	22.04	42.7	1 32 53.4	0.34	1.4748392	1.4646236	1.4653868
22	70 12 52.9	22.04	42.8	1 32 50.7	0.34	1.4748409	1.4661998	1.4670520
30	70 15 49.2	22.04	42.8	1 32 48.0	0.34	1.4748427	1.4679404	1.4688603
Feb. 7	70 18 45.3	22.04	42.8	1 32 45.3	0.34	1.4748444	1.4698069	1.4707757
15	70 21 41.8	22.04	−42.9	−1 32 42.6	+0.34	1.4748462	1.4717615	1.4727591
23	70 24 38.1	22.04	42.9	1 32 39.8	0.34	1.4748479	1.4737633	1.4747687
Mar. 3	70 27 34.4	22.04	43.0	1 32 37.1	0.34	1.4748496	1.4757710	1.4767655
11	70 30 30.8	22.04	43.0	1 32 34.4	0.34	1.4748514	1.4777479	1.4787136
19	70 33 27.1	22.04	43.0	1 32 31.7	0.34	1.4748531	1.4796583	1.4805771
27	70 36 23.4	22.04	−43.1	−1 32 28.9	+0.34	1.4748548	1.4814667	1.4823228
Apr. 4	70 39 19.7	22.04	43.1	1 32 26.2	0.34	1.4748565	1.4831427	1.4839232
12	70 42 16.1	22.04	43.2	1 32 23.5	0.34	1.4748583	1.4846612	1.4853532
20	70 45 12.4	22.04	43.2	1 32 20.7	0.34	1.4748600	1.4859967	1.4865890
28	70 48 8.7	22.04	43.3	1 32 18.0	0.34	1.4748617	1.4871286	1.4876142
May 6	70 51 5.0	22.04	−43.3	−1 32 15.2	+0.34	1.4748635	1.4880436	1.4884154
14	70 54 1.4	22.04	43.3	1 32 12.5	0.34	1.4748652	1.4887281	1.4889802
22	70 56 57.7	22.04	43.4	1 32 9.7	0.35	1.4748669	1.4891714	1.4893010
30	70 59 54.0	22.04	43.4	1 32 6.9	0.35	1.4748686	1.4893691	1.4893757
June 7	71 2 50.4	22.04	43.5	1 32 4.1	0.35	1.4748704	1.4893208	1.4892041
15	71 5 46.7	22.04	−43.5	−1 32 1.4	+0.35	1.4748721	1.4890265	1.4887882
23	71 8 43.0	22.04	43.5	1 31 58.6	0.35	1.4748738	1.4884906	1.4881349
July 1	71 11 39.4	22.04	43.6	1 31 55.8	0.35	1.4748755	1.4877226	1.4872552
9	71 14 35.7	22.04	43.6	1 31 53.1	0.35	1.4748772	1.4867342	1.4861609
17	71 17 32.0	22.04	43.7	1 31 50.3	0.35	1.4748789	1.4855381	1.4848690
25	71 20 28.4	22.04	−43.7	−1 31 47.5	+0.35	1.4748805	1.4841535	1.4833972
Aug. 2	71 23 24.7	22.04	43.7	1 31 44.7	0.35	1.4748823	1.4826020	1.4817706
10	71 26 21.0	22.04	43.8	1 31 41.9	0.35	1.4748839	1.4809065	1.4800128
18	71 29 17.4	22.04	43.8	1 31 39.1	0.35	1.4748856	1.4790936	1.4781530
26	71 32 13.7	22.04	43.9	1 31 36.3	0.35	1.4748873	1.4771949	1.4762233
Sept. 3	71 35 10.0	22.04	−43.9	−1 31 33.5	+0.35	1.4748889	1.4752423	1.4742557
11	71 38 6.4	22.04	43.9	1 31 30.7	0.35	1.4748906	1.4732686	1.4722858
19	71 41 2.7	22.04	44.0	1 31 27.8	0.35	1.4748922	1.4713119	1.4703518
27	71 43 59.1	22.04	44.0	1 31 25.0	0.35	1.4748939	1.4694100	1.4684909
Oct. 5	71 46 55.4	22.04	44.1	1 31 22.2	0.35	1.4748956	1.4675993	1.4667400
13	71 49 51.7	22.04	−44.1	−1 31 19.4	+0.35	1.4748972	1.4659176	1.4651373
21	71 52 48.1	22.04	44.1	1 31 16.5	0.35	1.4748989	1.4644028	1.4637183
29	71 55 44.4	22.04	44.2	1 31 13.7	0.36	1.4749005	1.4630872	1.4625137
Nov. 6	71 58 40.7	22.04	44.2	1 31 10.8	0.36	1.4749021	1.4620009	1.4615525
14	72 1 37.1	22.04	44.3	1 31 8.0	0.36	1.4749037	1.4611711	1.4608592
22	72 4 33.4	22.04	−44.3	−1 31 5.1	+0.36	1.4749053	1.4606186	1.4604505
30	72 7 29.8	22.04	44.3	1 31 2.3	0.36	1.4749069	1.4603559	1.4603362
Dec. 8	72 10 26.1	22.04	44.4	1 30 59.4	0.36	1.4749085	1.4603913	1.4605214
16	72 13 22.4	22.04	44.4	1 30 56.6	0.36	1.4749101	1.4607265	1.4610041
24	72 16 18.8	22.04	44.5	1 30 53.7	0.36	1.4749117	1.4613526	1.4617702
32	72 19 15.1	22.04	−44.5	−1 30 50.8	+0.36	1.4749132	1.4622547	

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Jan. 1	+0.1938803	+0.2024440	+418	−0.8842738	−0.8826578	−61	−0.3836675	−0.3829661	+338
2	0.2109921	0.2195238	407	0.8809733	0.8792207	56	0.3822351	0.3814746	340
3	0.2280387	0.2365359	396	0.8774000	0.8755114	50	0.3806846	0.3798652	341
4	0.2450150	0.2534752	386	0.8735550	0.8715309	44	0.3790164	0.3781383	342
5	0.2619159	0.2703365	375	0.8694393	0.8672802	39	0.3772309	0.3762942	343
6	+0.2787363	+0.2871148	+365	−0.8650539	−0.8627604	−34	−0.3753284	−0.3743335	+344
7	0.2954713	0.3038052	355	0.8603999	0.8579725	30	0.3733095	0.3722565	344
8	0.3121160	0.3204028	345	0.8554784	0.8529178	25	0.3711747	0.3700641	345
9	0.3286652	0.3369024	334	0.8502908	0.8475976	22	0.3689247	0.3677566	344
10	0.3451138	0.3532987	324	0.8448385	0.8420134	18	0.3665599	0.3653346	344
11	+0.3614565	+0.3695865	+314	−0.8391227	−0.8361665	−14	−0.3640808	−0.3627985	+344
12	0.3776881	0.3857606	304	0.8331448	0.8300583	11	0.3614879	0.3601490	343
13	0.3938034	0.4018158	294	0.8269066	0.8236906	9	0.3587820	0.3573869	342
14	0.4097971	0.4177467	284	0.8204101	0.8170656	7	0.3559639	0.3545130	341
15	0.4256637	0.4335477	273	0.8136573	0.8101853	5	0.3530344	0.3515282	340
16	+0.4413978	+0.4492137	+263	−0.8066501	−0.8030517	− 3	−0.3499945	−0.3484334	+339
17	0.4569944	0.4647397	253	0.7993907	0.7956672	− 2	0.3468451	0.3452296	338
18	0.4724485	0.4801205	244	0.7918817	0.7880344	0	0.3435872	0.3419179	336
19	0.4877549	0.4953511	234	0.7841257	0.7801559	+ 1	0.3402219	0.3384994	334
20	0.5029085	0.5104265	225	0.7761254	0.7720346	2	0.3367505	0.3349757	333
21	+0.5179045	+0.5253419	+216	−0.7678837	−0.7636733	+ 2	−0.3331743	−0.3313473	+330
22	0.5327381	0.5400926	207	0.7594036	0.7550751	2	0.3294945	0.3276161	328
23	0.5474048	0.5546741	198	0.7506879	0.7462428	3	0.3257123	0.3237833	325
24	0.5619000	0.5690820	189	0.7417397	0.7371795	3	0.3218292	0.3198502	322
25	0.5762194	0.5833120	180	0.7325622	0.7278885	3	0.3178466	0.3158185	319
26	+0.5903590	+0.5973602	+172	−0.7231586	−0.7183731	+ 3	−0.3137660	−0.3116894	+316
27	0.6043149	0.6112228	163	0.7135322	0.7086365	3	0.3095888	0.3074644	312
28	0.6180833	0.6248959	155	0.7036864	0.6986820	3	0.3053164	0.3031449	309
29	0.6316602	0.6383755	147	0.6936242	0.6885130	+ 2	0.3009502	0.2987324	305
30	0.6450417	0.6516577	139	0.6833490	0.6781325	0	0.2964917	0.2942283	301
31	+0.6582238	+0.6647389	+131	−0.6728639	−0.6675436	− 1	−0.2919424	−0.2896341	+297
Feb. 1	0.6712029	0.6776154	124	0.6621721	0.6567496	2	0.2873036	0.2849510	293
2	0.6839757	0.6902837	117	0.6512765	0.6457533	3	0.2825765	0.2801803	288
3	0.6965388	0.7027406	109	0.6401802	0.6345580	4	0.2777625	0.2753233	283
4	0.7088887	0.7149825	103	0.6288867	0.6231671	6	0.2728629	0.2703815	278
5	+0.7210217	+0.7270056	+ 96	−0.6173992	−0.6115838	− 7	−0.2678792	−0.2653563	+273
6	0.7329339	0.7388060	89	0.6057210	0.5998116	9	0.2628129	0.2602492	268
7	0.7446215	0.7503800	83	0.5938557	0.5878541	10	0.2576655	0.2550619	263
8	0.7560809	0.7617240	77	0.5818068	0.5757147	12	0.2524385	0.2497956	258
9	0.7673087	0.7728346	71	0.5695779	0.5633970	14	0.2471333	0.2444518	253
10	+0.7783012	+0.7837081	+ 65	−0.5571725	−0.5509047	−16	−0.2417514	−0.2390322	+247
11	0.7890549	0.7943411	60	0.5445941	0.5382413	18	0.2362944	0.2335382	240
12	0.7995663	0.8047300	55	0.5318467	0.5254109	20	0.2307638	0.2279715	234
13	0.8098319	0.8148714	49	0.5189344	0.5124178	22	0.2251615	0.2223341	228
14	0.8198483	0.8247620	44	0.5058616	0.4992663	24	0.2194895	0.2166279	222
15	+0.8296122	+0.8343985	+ 40	−0.4926325	−0.4859607	−26	−0.2137496	−0.2108547	+215

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Feb. 15	+0.8296122	+0.8343985	+40	−0.4926325	−0.4859607	− 26	−0.2137496	−0.2108547	+215
16	0.8391204	0.8437778	35	0.4792514	0.4725053	28	0.2079435	0.2050163	208
17	0.8483700	0.8528970	31	0.4657227	0.4589045	30	0.2020733	0.1991147	202
18	0.8573582	0.8617534	27	0.4520509	0.4451630	32	0.1961409	0.1931520	195
19	0.8660823	0.8703445	23	0.4382409	0.4312856	35	0.1901484	0.1871301	188
20	+0.8745400	+0.8786680	+20	−0.4242974	−0.4172771	− 38	−0.1840978	−0.1810514	+181
21	0.8827287	0.8867215	16	0.4102250	0.4031419	40	0.1779912	0.1749176	174
22	0.8906463	0.8945029	13	0.3960282	0.3888846	42	0.1718307	0.1687309	167
23	0.8982910	0.9020105	10	0.3817116	0.3745097	44	0.1656184	0.1624934	160
24	0.9056611	0.9092427	7	0.3672797	0.3600220	47	0.1593561	0.1562069	152
25	+0.9127551	+0.9161979	+ 5	−0.3527373	−0.3454261	− 49	−0.1530459	−0.1498735	+145
26	0.9195712	0.9228744	+ 3	0.3380890	0.3307266	52	0.1466899	0.1434954	137
27	0.9261077	0.9292707	0	0.3233394	0.3159279	54	0.1402902	0.1370745	130
28	0.9323632	0.9353853	− 2	0.3084928	0.3010343	57	0.1338486	0.1306126	122
Mar. 1	0.9383365	0.9412169	3	0.2935532	0.2860500	60	0.1273668	0.1241114	114
2	+0.9440261	+0.9467642	− 5	−0.2785251	−0.2709794	− 62	−0.1208466	−0.1175728	+106
3	0.9494308	0.9520259	6	0.2634131	0.2558272	65	0.1142901	0.1109989	98
4	0.9545492	0.9570007	7	0.2482218	0.2405977	68	0.1076993	0.1043917	89
5	0.9593800	0.9616873	8	0.2329553	0.2252952	70	0.1010761	0.0977528	81
6	0.9639222	0.9660844	9	0.2176179	0.2099239	72	0.0944221	0.0910840	73
7	+0.9681740	+0.9701907	−10	−0.2022138	−0.1944881	− 74	−0.0877390	−0.0843872	+ 64
8	0.9721343	0.9740049	10	0.1867473	0.1789921	77	0.0810288	0.0776642	56
9	0.9758020	0.9775258	10	0.1712229	0.1634405	79	0.0742936	0.0709172	48
10	0.9791759	0.9807523	10	0.1556454	0.1478383	81	0.0675353	0.0641482	40
11	0.9822547	0.9836832	10	0.1400197	0.1321904	84	0.0607560	0.0573591	31
12	+0.9850374	+0.9863175	−10	−0.1243509	−0.1165017	− 86	−0.0539576	−0.0505519	+ 22
13	0.9875231	0.9886544	9	0.1086435	0.1007767	88	0.0471422	0.0437288	14
14	0.9897113	0.9906932	8	0.0929019	0.0850199	90	0.0403120	0.0368920	+ 6
15	0.9916007	0.9924332	7	0.0771311	0.0692364	92	0.0334691	0.0300435	− 3
16	0.9931909	0.9938737	6	0.0613362	0.0534314	95	0.0266156	0.0231855	12
17	+0.9944815	+0.9950145	− 5	−0.0455226	−0.0376104	− 97	−0.0197536	−0.0163202	− 20
18	0.9954724	0.9958555	3	0.0296954	0.0217783	99	0.0128857	0.0094502	29
19	0.9961635	0.9963968	− 2	−0.0138597	−0.0059402	101	−0.0060141	−0.0025776	38
20	0.9965550	0.9966385	0	+0.0019794	+0.0098988	103	+0.0008590	+0.0042954	47
21	0.9966471	0.9965811	+ 2	0.0178171	0.0257340	105	0.0077314	0.0111607	55
22	+0.9964403	+0.9962251	+ 5	+0.0336486	+0.0415606	−107	+0.0146011	+0.0180343	− 64
23	0.9959352	0.9955711	7	0.0494690	0.0573736	109	0.0214660	0.0248959	72
24	0.9951326	0.9946200	10	0.0652735	0.0731681	111	0.0283238	0.0317493	80
25	0.9940333	0.9933727	12	0.0810569	0.0889391	113	0.0351723	0.0385924	89
26	0.9926383	0.9918303	15	0.0968144	0.1046820	114	0.0420094	0.0454231	97
27	+0.9909487	+0.9899938	+18	+0.1125415	+0.1203924	−116	+0.0488332	+0.0522396	−106
28	0.9889656	0.9878643	22	0.1282341	0.1360662	118	0.0556421	0.0590403	114
29	0.9866901	0.9854429	25	0.1438881	0.1516992	119	0.0624340	0.0658229	122
30	0.9841232	0.9827307	29	0.1594990	0.1672868	121	0.0692069	0.0725857	130
31	0.9812660	0.9797289	33	0.1750621	0.1828247	122	0.0759590	0.0793267	139
32	+0.9781197	+0.9764385	+37	+0.1905738	+0.1983083	−124	+0.0826885	+0.0860442	−148

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Apr. 1	+0.9781197	+0.9764385	+ 37	+0.1905738	+0.1983083	−124	+0.0826885	+0.0860442	−148
2	0.9746854	0.9728608	41	0.2060285	0.2137338	126	0.0893936	0.0927365	156
3	0.9709645	0.9689970	45	0.2214234	0.2290970	127	0.0960726	0.0994017	164
4	0.9669582	0.9648484	50	0.2367537	0.2443935	128	0.1027236	0.1060381	172
5	0.9626675	0.9604159	54	0.2520154	0.2596192	130	0.1093449	0.1126438	180
6	+0.9580935	+0.9557007	+ 59	+0.2672042	+0.2747699	−131	+0.1159345	+0.1192169	−188
7	0.9532374	0.9507041	64	0.2823157	0.2898411	132	0.1224907	0.1257557	196
8	0.9481007	0.9454276	70	0.2973454	0.3048283	134	0.1290117	0.1322584	204
9	0.9426848	0.9398726	75	0.3122890	0.3197272	136	0.1354955	0.1387229	212
10	0.9369912	0.9340407	81	0.3271422	0.3345334	137	0.1419402	0.1451472	220
11	+0.9310213	+0.9279333	+ 87	+0.3419003	+0.3492424	−138	+0.1483437	+0.1515294	−227
12	0.9247767	0.9215521	98	0.3565589	0.3638496	139	0.1547042	0.1578677	234
13	0.9182594	0.9148993	99	0.3711137	0.3783507	140	0.1610198	0.1641602	241
14	0.9114717	0.9079772	105	0.3855602	0.3927412	141	0.1672886	0.1704048	248
15	0.9044159	0.9007881	112	0.3998936	0.4070165	142	0.1735084	0.1765992	255
16	+0.8970941	+0.8933342	+119	+0.4141094	+0.4211719	−143	+0.1796770	+0.1827415	−262
17	0.8895087	0.8856179	126	0.4282032	0.4352032	144	0.1857926	0.1888300	270
18	0.8816620	0.8776415	133	0.4421710	0.4491064	145	0.1918536	0.1948631	277
19	0.8735571	0.8694089	140	0.4560087	0.4628774	146	0.1978582	0.2008387	283
20	0.8651974	0.8609230	148	0.4697120	0.4765120	146	0.2038044	0.2067551	290
21	+0.8565857	+0.8521861	+155	+0.4832769	+0.4900064	−147	+0.2096905	+0.2126105	−296
22	0.8477245	0.8432014	163	0.4966999	0.5033572	147	0.2155148	0.2184033	302
23	0.8386168	0.8339720	171	0.5099776	0.5165607	147	0.2212758	0.2241321	308
24	0.8292664	0.8245014	179	0.5231061	0.5296132	148	0.2269719	0.2297951	314
25	0.8196767	0.8147931	188	0.5360816	0.5425109	148	0.2326015	0.2353909	320
26	+0.8098509	+0.8048503	+196	+0.5489006	+0.5552505	−148	+0.2381632	+0.2409181	−326
27	0.7997920	0.7946759	205	0.5615599	0.5678289	148	0.2436554	0.2463750	332
28	0.7895028	0.7842729	214	0.5740567	0.5802431	148	0.2490768	0.2517606	337
29	0.7789866	0.7736444	223	0.5863877	0.5924900	147	0.2544262	0.2570735	342
30	0.7682466	0.7627936	232	0.5985496	0.6045663	147	0.2597024	0.2623126	348
May 1	+0.7572861	+0.7517240	+241	+0.6105394	+0.6164689	−146	+0.2649039	+0.2674762	−352
2	0.7461079	0.7404381	250	0.6223541	0.6281948	145	0.2700294	0.2725633	356
3	0.7347152	0.7289392	260	0.6339904	0.6397407	144	0.2750777	0.2775725	361
4	0.7231109	0.7172305	270	0.6454451	0.6511035	143	0.2800474	0.2825023	365
5	0.7112985	0.7053152	280	0.6567153	0.6622802	142	0.2849370	0.2873514	368
6	+0.6992811	+0.6931965	+290	+0.6677979	+0.6732678	−140	+0.2897453	+0.2921186	−372
7	0.6870619	0.6808778	300	0.6786897	0.6840631	139	0.2944710	0.2968024	376
8	0.6746444	0.6683624	310	0.6893876	0.6946628	138	0.2991127	0.3014017	379
9	0.6620319	0.6556536	321	0.6998884	0.7050638	136	0.3036691	0.3059148	383
10	0.6492277	0.6427549	332	0.7101888	0.7152629	134	0.3081387	0.3103406	387
11	+0.6362354	+0.6296700	+343	+0.7202857	+0.7252569	−132	+0.3125202	+0.3146774	−391
12	0.6230590	0.6164031	353	0.7301760	0.7350429	130	0.3168121	0.3189240	395
13	0.6097026	0.6029582	364	0.7398569	0.7446179	127	0.3210131	0.3230792	398
14	0.5961701	0.5893392	375	0.7493254	0.7539791	124	0.3251220	0.3271415	400
15	0.5824657	0.5755505	386	0.7585785	0.7631234	122	0.3291374	0.3311096	402
16	+0.5685938	+0.5615964	+398	+0.7676133	+0.7720480	−119	+0.3330580	+0.3349824	−405

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
May 16	+0.5685938	+0.5615964	+398	+0.7676133	+0.7720480	−119	+0.3330580	+0.3349824	−405
17	0.5545587	0.5474814	410	0.7764271	0.7807505	115	0.3368826	0.3387586	407
18	0.5403649	0.5332099	421	0.7850177	0.7892286	111	0.3406102	0.3424373	410
19	0.5260170	0.5187866	433	0.7933830	0.7974804	107	0.3542399	0.3460178	412
20	0.5115194	0.5042158	444	0.8015208	0.8055036	103	0.3477709	0.3494990	414
21	+0.4968765	+0.4895020	+456	+0.8094287	+0.8132958	− 99	+0.3512020	+0.3528797	−414
22	0.4820930	0.4746497	468	0.8171045	0.8208550	94	0.3545321	0.3561591	415
23	0.4671731	0.4596637	480	0.8245465	0.8281795	90	0.3577606	0.3593366	416
24	0.4521219	0.4445484	492	0.8317534	0.8352682	86	0.3608870	0.3624116	416
25	0.4369438	0.4293084	504	0.8387236	0.8421195	81	0.3639105	0.3653835	416
26	+0.4216428	+0.4139476	+516	+0.8454555	+0.8487316	− 76	+0.3668306	+0.3682516	−416
27	0.4062233	0.3984705	528	0.8519474	0.8551029	70	0.3696466	0.3710154	417
28	0.3906899	0.3828818	540	0.8581978	0.8612321	65	0.3723579	0.3736741	417
29	0.3750469	0.3671859	552	0.8642055	0.8671180	58	0.3749640	0.3762274	416
30	0.3592989	0.3513863	564	0.8698693	0.8727593	52	0.3774642	0.3786744	416
31	+0.3434489	+0.3354873	+576	+0.8754877	+0.8781544	− 46	+0.3798580	+0.3810148	−415
June 1	0.3275018	0.3194931	588	0.8807592	0.8833019	39	0.3821448	0.3832479	414
2	0.3114616	0.3034080	600	0.8857823	0.8882003	31	0.3843241	0.3853732	412
3	0.2953328	0.2872365	612	0.8905557	0.8928484	24	0.3863952	0.3873900	410
4	0.2791197	0.2709828	624	0.8950782	0.8972449	16	0.3883575	0.3892977	409
5	+0.2628264	+0.2546510	+636	+0.8993483	+0.9013883	− 8	+0.3902105	+0.3910957	−407
6	0.2464573	0.2382457	648	0.9033645	0.9052771	0	0.3919534	0.3927834	405
7	0.2300169	0.2217715	660	0.9071256	0.9089102	+ 9	0.3935858	0.3943605	403
8	0.2135100	0.2052331	671	0.9106305	0.9122864	18	0.3951073	0.3958261	401
9	0.1969411	0.1886350	683	0.9138777	0.9154044	26	0.3965168	0.3971795	399
10	+0.1803151	+0.1719819	+694	+0.9168660	+0.9182630	+ 36	+0.3978140	+0.3984204	−395
11	0.1636362	0.1552790	706	0.9195945	0.9208611	46	0.3989985	0.3995483	392
12	0.1469105	0.1385315	717	0.9220623	0.9231979	55	0.4000698	0.4005628	388
13	0.1301425	0.1217443	728	0.9242683	0.9252727	65	0.4010274	0.4014635	384
14	0.1133373	0.1049223	739	0.9262118	0.9270850	76	0.4018711	0.4022501	380
15	+0.0964999	+0.0880708	+749	+0.9278925	+0.9286342	+ 86	+0.4026006	+0.4029224	−376
16	0.0796356	0.0711949	760	0.9293101	0.9299201	97	0.4032157	0.4034804	373
17	0.0627494	0.0542997	770	0.9304642	0.9309424	108	0.4037164	0.4039238	369
18	0.0458463	0.0373901	780	0.9313547	0.9317011	120	0.4041026	0.4042528	364
19	0.0289314	0.0204712	790	0.9319817	0.9321964	132	0.4043743	0.4044672	359
20	+0.0120098	+0.0035481	+800	+0.9323452	+0.9324283	+144	+0.4045315	+0.4045673	−354
21	−0.0049135	−0.0133743	811	0.9324455	0.9323972	156	0.4045745	0.4045532	349
22	0.0218337	0.0302912	820	0.9322831	0.9321036	169	0.4045035	0.4044253	343
23	0.0387462	0.0471981	829	0.9318584	0.9315479	182	0.4043186	0.4041835	338
24	0.0556465	0.0640906	838	0.9311718	0.9307305	195	0.4040200	0.4038281	332
25	−0.0725300	−0.0809639	+847	+0.9302237	+0.9296519	+208	+0.4036079	+0.4033594	−326
26	0.0893919	0.0978133	855	0.9290148	0.9283128	222	0.4030826	0.4027777	320
27	0.1062278	0.1146346	863	0.9275457	0.9267137	236	0.4024449	0.4020838	314
28	0.1230333	0.1314235	870	0.9258167	0.9248549	250	0.4016943	0.4012769	307
29	0.1398044	0.1481757	878	0.9238283	0.9227371	264	0.4008315	0.4003580	301
30	−0.1565366	−0.1648866	+885	+0.9215812	+0.9203609	+279	+0.3998565	+0.3993270	−294

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
July 1	−0.1732250	−0.1815516	+892	+0.9190761	+0.9177270	+294	+0.3987696	+0.3981843	−286
2	0.1898654	0.1981665	898	0.9163134	0.9148357	308	0.3975712	0.3969303	279
3	0.2064538	0.2147272	905	0.9132935	0.9116874	323	0.3962616	0.3955650	272
4	0.2229860	0.2312295	910	0.9100171	0.9082829	338	0.3948405	0.3940884	265
5	0.2394572	0.2476684	916	0.9064847	0.9046228	352	0.3933085	0.3925010	257
6	−0.2558626	−0.2640391	+921	+0.9026970	+0.9007078	+366	+0.3916658	+0.3908030	−249
7	0.2721974	0.2803367	926	0.8986549	0.8965387	381	0.3899127	0.3889948	241
8	0.2884566	0.2965565	931	0.8943591	0.8921163	399	0.3880497	0.3870769	232
9	0.3046357	0.3126938	934	0.8898104	0.8874415	416	0.3860767	0.3850492	224
10	0.3207300	0.3287438	938	0.8850097	0.8825153	434	0.3839943	0.3829123	215
11	−0.3367345	−0.3447016	+941	+0.8799583	+0.8773391	+452	+0.3818031	+0.3806668	−206
12	0.3526444	0.3605624	944	0.8746577	0.8719144	468	0.3795037	0.3783136	197
13	0.3684549	0.3763213	946	0.8691093	0.8662427	485	0.3770966	0.3758528	188
14	0.3841610	0.3919734	948	0.8633146	0.8603255	502	0.3745824	0.3732854	178
15	0.3997580	0.4075141	949	0.8572753	0.8541646	518	0.3719620	0.3706122	169
16	−0.4152412	−0.4229387	+951	+0.8509934	+0.8477621	+535	+0.3692361	+0.3678339	−160
17	0.4306060	0.4382427	952	0.8444709	0.8411200	552	0.3664057	0.3649516	150
18	0.4458481	0.4534217	952	0.8377097	0.8342403	568	0.3634717	0.3619661	141
19	0.4609630	0.4684712	952	0.8307120	0.8271252	585	0.3604349	0.3588783	132
20	0.4759460	0.4833868	951	0.8234801	0.8197771	602	0.3572964	0.3556894	122
21	−0.4907930	−0.4981643	+950	+0.8160163	+0.8121983	+620	+0.3540574	+0.3524005	−111
22	0.5055000	0.5127999	948	0.8083231	0.8043912	637	0.3507189	0.3490126	100
23	0.5200633	0.5272898	946	0.8004027	0.7963580	654	0.3472818	0.3455266	90
24	0.5344791	0.5416304	944	0.7922574	0.7881013	671	0.3437472	0.3419437	80
25	0.5487435	0.5558178	941	0.7838698	0.7796235	688	0.3401163	0.3382650	69
26	−0.5628528	−0.5698481	+937	+0.7753024	+0.7709270	+706	+0.3363901	+0.3344916	− 58
27	0.5768032	0.5837176	934	0.7764974	0.7620140	723	0.3325697	0.3306244	48
28	0.5905909	0.5974227	930	0.7574769	0.7528866	740	0.3286560	0.3266645	37
29	0.6042125	0.6109599	925	0.7482431	0.7435471	758	0.3246500	0.3226127	26
30	0.6176644	0.6243256	919	0.7387985	0.7339980	776	0.3205526	0.3184699	15
31	−0.6309432	−0.6375165	+914	+0.7291455	+0.7242417	+793	+0.3163648	+0.3142374	− 4
Aug. 1	0.6440449	0.6505281	907	0.7192865	0.7142806	810	0.3120878	0.3099162	+ 8
2	0.6569655	0.6633568	901	0.7092239	0.7041170	826	0.3077226	0.3055072	19
3	0.6697015	0.6759990	894	0.6989601	0.6937535	843	0.3032701	0.3010114	30
4	0.6822491	0.6884510	886	0.6884976	0.6831927	860	0.2987313	0.2964299	42
5	−0.6946046	−0.7007090	+878	+0.6778390	+0.6724371	+876	+0.2941074	+0.2917639	+ 53
6	0.7067640	0.7127690	869	0.6669871	0.6614895	892	0.2893995	0.2870144	64
7	0.7187234	0.7246269	860	0.6559445	0.6503527	908	0.2846088	0.2821827	76
8	0.7304791	0.7362794	850	0.6447142	0.6390296	924	0.2797364	0.2772700	87
9	0.7420272	0.7477223	840	0.6332992	0.6275234	940	0.2747838	0.2722778	99
10	−0.7533639	−0.7589519	+830	+0.6217026	+0.6158373	+956	+0.2697523	+0.2672074	+112
11	0.7644856	0.7699648	819	0.6099278	0.6039747	971	0.2646433	0.2620602	124
12	0.7753889	0.7807575	807	0.5979780	0.5919391	987	0.2594584	0.2568379	136
13	0.7860703	0.7913265	795	0.5858575	0.5797343	1002	0.2541990	0.2515419	148
14	0.7965261	0.8016684	783	0.5735696	0.5673642	1018	0.2488669	0.2461741	160
15	−0.8067530	−0.8117798	+770	+0.5611182	+0.5548323	+1033	+0.2434638	+0.2407361	+171

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Aug. 16	−0.8167480	−0.8216579	+757	+0.5485068	+0.5421422	+1048	+0.2379912	+0.2352293	+183
17	0.8265087	0.8313002	743	0.5357389	0.5292976	1062	0.2324507	0.2296555	195
18	0.8360321	0.8407039	729	0.5228185	0.5163025	1075	0.2268441	0.2240166	208
19	0.8453154	0.8498662	715	0.5097498	0.5031611	1088	0.2211732	0.2183142	220
20	0.8543560	0.8587845	700	0.4965367	0.4898772	1102	0.2154397	0.2125501	232
21	−0.8631517	−0.8674568	+684	+0.4831828	+0.4764545	+1115	+0.2096453	+0.2067257	+244
22	0.8717001	0.8758807	668	0.4696924	0.4628970	1128	0.2037916	0.2008431	256
23	0.8799989	0.8840539	652	0.4560687	0.4492083	1142	0.1978804	0.1949037	268
24	0.8880458	0.8919742	635	0.4423158	0.4353921	1155	0.1919132	0.1889091	280
25	0.8958369	0.8996396	618	0.4284371	0.4214520	1167	0.1858917	0.1828610	292
26	−0.9033761	−0.9070481	+601	+0.4144366	+0.4073919	+1178	+0.1798174	+0.1767610	+304
27	0.9106552	0.9141974	583	0.4003179	0.3932153	1190	0.1736920	0.1706106	315
28	0.9176741	0.9210854	565	0.3860844	0.3789259	1202	0.1675169	0.1644112	327
29	0.9244308	0.9277102	547	0.3717400	0.3645275	1212	0.1612937	0.1581646	339
30	0.9309233	0.9340697	528	0.3572886	0.3500240	1223	0.1550241	0.1518723	350
31	−0.9371493	−0.9401615	+508	+0.3427339	+0.3354191	+1234	+0.1487096	+0.1455360	+362
Sept. 1	0.9431064	0.9459835	489	0.3280797	0.3207166	1244	0.1423519	0.1391574	374
2	0.9487926	0.9515335	469	0.3133300	0.3059205	1253	0.1359527	0.1327381	385
3	0.9542059	0.9568096	448	0.2984886	0.2910347	1262	0.1295137	0.1262798	396
4	0.9593443	0.9618097	428	0.2835595	0.2760634	1270	0.1230365	0.1197841	406
5	−0.9642056	−0.9665316	+407	+0.2685470	+0.2610108	+1279	+0.1165229	+0.1132531	+417
6	0.9687877	0.9709733	385	0.2534554	0.2458814	1287	0.1099749	0.1066886	428
7	0.9730885	0.9751330	364	0.2382893	0.2306797	1294	0.1033944	0.1000926	439
8	0.9771065	0.9790089	342	0.2230532	0.2154102	1302	0.0967834	0.0934670	450
9	0.9808400	0.9825996	320	0.2077513	0.2000772	1310	0.0901436	0.0868136	461
10	−0.9842875	−0.9859036	+297	+0.1923883	+0.1846854	+1316	+0.0834771	+0.0801346	+472
11	0.9874477	0.9889197	275	0.1769690	0.1692398	1322	0.0767862	0.0734322	483
12	0.9903194	0.9916468	252	0.1614983	0.1537452	1328	0.0700729	0.0667085	494
13	0.9929015	0.9940839	228	0.1459811	0.1382065	1334	0.0633394	0.0599657	505
14	0.9951932	0.9962300	205	0.1304219	0.1226281	1338	0.0565878	0.0532058	515
15	−0.9971937	−0.9980846	+181	+0.1148254	+0.1070147	+1342	+0.0498200	+0.0464307	+525
16	0.9989024	0.9996472	157	0.0991963	0.0913711	1347	0.0430381	0.0396426	534
17	1.0003188	1.0009173	133	0.0835394	0.0757022	1351	0.0362443	0.0328436	544
18	1.0014426	1.0018948	108	0.0678597	0.0600128	1354	0.0294407	0.0260358	554
19	1.0022737	1.0025795	84	0.0521618	0.0443074	1358	0.0226293	0.0192213	564
20	−1.0028121	−1.0029715	+ 58	+0.0364500	+0.0285903	+1362	+0.0158121	+0.0124019	+574
21	1.0030577	1.0030707	33	0.0207288	+0.0128660	1365	0.0089910	+0.0055796	584
22	1.0030104	1.0028770	+ 8	+0.0050025	−0.0028612	1366	+0.0021678	−0.0012440	593
23	1.0026702	1.0023905	− 17	−0.0107245	0.0185868	1368	−0.0046555	0.0080666	602
24	1.0020373	1.0016113	43	0.0264476	0.0343063	1369	0.0114771	0.0148866	610
25	−1.0011118	−1.0005394	− 69	−0.0421625	−0.0500155	+1370	−0.0182950	−0.0217080	+619
26	0.9998937	0.9991750	95	0.0578650	0.0657102	1369	0.0251074	0.0285110	627
27	0.9983830	0.9975180	121	0.0735508	0.0813861	1368	0.0319126	0.0353119	634
28	0.9965797	0.9955683	147	0.0892156	0.0970388	1366	0.0387088	0.0421029	642
29	0.9944837	0.9933260	174	0.1048551	0.1126640	1365	0.0454941	0.0488821	650
30	−0.9920951	−0.9907913	−200	−0.1204649	−0.1282573	+1363	−0.0522666	−0.0556475	+657

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Oct. 1	−0.9894145	−0.9879645	− 227	−0.1360405	−0.1438141	+1361	−0.0590243	−0.0623971	+664
2	0.9864415	0.9848458	254	0.1515774	0.1593298	1359	0.0657654	0.0691291	672
3	0.9831770	0.9814356	281	0.1670709	0.1747998	1357	0.0724878	0.0758413	679
4	0.9796212	0.9777342	308	0.1825162	0.1902193	1354	0.0791894	0.0825318	686
5	0.9757743	0.9737418	335	0.1979086	0.2055836	1350	0.0858683	0.0891986	692
6	−0.9716367	−0.9694591	− 362	−0.2132436	−0.2208880	+1346	−0.0925224	−0.0958395	+698
7	0.9672092	0.9648870	390	0.2285162	0.2361275	1343	0.0991495	0.1024522	705
8	0.9624928	0.9600267	417	0.2437214	0.2512972	1338	0.1057474	0.1090348	710
9	0.9574888	0.9548794	444	0.2588541	0.2663919	1332	0.1123141	0.1155850	716
10	0.9521984	0.9494462	472	0.2739096	0.2814070	1327	0.1188473	0.1221007	721
11	−0.9466228	−0.9437286	− 500	−0.2888833	−0.2963379	+1322	−0.1253449	−0.1285797	+726
12	0.9407636	0.9377282	527	0.3037703	0.3111797	1315	0.1318048	0.1350199	730
13	0.9346226	0.9314470	555	0.3185655	0.3259273	1308	0.1382248	0.1414192	735
14	0.9282018	0.9248870	583	0.3332641	0.3405759	1300	0.1446028	0.1477755	740
15	0.9215031	0.9180501	610	0.3478615	0.3551211	1293	0.1509369	0.1540869	744
16	−0.9145285	−0.9109386	− 638	−0.3623536	−0.3695588	+1264	−0.1572251	−0.1603514	+748
17	0.9072804	0.9035547	666	0.3767360	0.3838847	1276	0.1634655	0.1665672	751
18	0.8997613	0.8959007	694	0.3910043	0.3980944	1267	0.1696562	0.1727323	754
19	0.8919733	0.8879790	722	0.4051542	0.4121636	1259	0.1757953	0.1788450	758
20	0.8839186	0.8797920	749	0.4191816	0.4261482	1249	0.1818812	0.1849037	760
21	−0.8755998	−0.8713422	− 777	−0.4330825	−0.4399842	+1238	−0.1879122	−0.1909065	+763
22	0.8670195	0.8626321	805	0.4468529	0.4536878	1228	0.1938863	0.1968516	766
23	0.8581801	0.8536640	833	0.4604887	0.4672550	1218	0.1998020	0.2027375	768
24	0.8490839	0.8444402	860	0.4739861	0.4806816	1206	0.2056577	0.2085625	770
25	0.8397331	0.8349630	888	0.4873412	0.4939643	1194	0.2114517	0.2143250	771
26	−0.8301302	−0.8252350	− 916	−0.5005502	−0.5070987	+1182	−0.2171823	−0.2200233	+772
27	0.8202779	0.8152589	943	0.5136091	0.5200811	1170	0.2228478	0.2256557	774
28	0.8101787	0.8050373	971	0.5265140	0.5329076	1156	0.2284467	0.2312206	774
29	0.7998352	0.7945725	998	0.5392612	0.5455745	1143	0.2339773	0.2367165	774
30	0.7892497	0.7838669	1025	0.5518468	0.5580778	1130	0.2394379	0.2421414	773
31	−0.7784246	−0.7729230	−1053	−0.5642667	−0.5704133	+1116	−0.2448267	−0.2474937	+773
Nov. 1	0.7673626	0.7617437	1080	0.5765169	0.5825771	1101	0.2501421	0.2527717	772
2	0.7560668	0.7503322	1107	0.5885933	0.5945651	1086	0.2553823	0.2579736	772
3	0.7445404	0.7386916	1134	0.6004918	0.6063734	1072	0.2605454	0.2630976	771
4	0.7327864	0.7268250	1161	0.6122068	0.6179980	1057	0.2656298	0.2681419	770
5	−0.7208080	−0.7147358	−1188	−0.6237403	−0.6294350	+1040	−0.2706337	−0.2731049	+768
6	0.7086087	0.7024275	1215	0.6350819	0.6406801	1023	0.2755552	0.2779845	765
7	0.6961922	0.6899038	1241	0.6462295	0.6517293	1007	0.2803926	0.2827793	762
8	0.6835623	0.6771685	1268	0.6571793	0.6625790	990	0.2851443	0.2874875	760
9	0.6707226	0.6642254	1294	0.6679280	0.6732258	971	0.2898086	0.2921075	756
10	−0.6576771	−0.6510787	−1320	−0.6784721	−0.6836662	+ 952	−0.2943839	−0.2966377	+753
11	0.6444303	0.6377327	1346	0.6888078	0.6938964	933	0.2988687	0.3010767	750
12	0.6309864	0.6241919	1372	0.6989315	0.7039129	914	0.3032615	0.3054229	746
13	0.6173499	0.6104608	1397	0.7088400	0.7137126	894	0.3075607	0.3096747	741
14	0.6035252	0.5965437	1422	0.7185301	0.7232924	874	0.3117649	0.3138310	736
15	−0.5895167	−0.5824449	−1447	−0.7279989	−0.7326495	+ 853	−0.3158730	−0.3178906	+732

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Nov. 16	−0.5753286	−0.5681686	−1472	−0.7372437	−0.7417814	+833	−0.3198838	−0.3218524	+727
17	0.5609653	0.5537194	1497	0.7462621	0.7506855	811	0.3237962	0.3257151	721
18	0.5464314	0.5391018	1521	0.7550513	0.7593590	790	0.3276090	0.3294778	715
19	0.5317314	0.5243205	1545	0.7636085	0.7677994	768	0.3313211	0.3331391	709
20	0.5168699	0.5093799	1569	0.7719314	0.7760043	746	0.3349315	0.3366983	703
21	−0.5018513	−0.4942844	−1592	−0.7800178	−0.7839714	+722	−0.3384393	−0.3401544	+694
22	0.4866799	0.4790381	1616	0.7878651	0.7916982	698	0.3418434	0.3435062	690
23	0.4713598	0.4636453	1639	0.7954708	0.7991823	674	0.3451428	0.3467530	683
24	0.4558954	0.4481104	1661	0.8028328	0.8064217	650	0.3483366	0.3498936	676
25	0.4402910	0.4324378	1684	0.8099490	0.8134142	624	0.3514238	0.3529272	668
26	−0.4245512	−0.4166318	−1706	−0.8168172	−0.8201575	+599	−0.3544036	−0.3558529	+659
27	0.4086802	0.4006969	1728	0.8234350	0.8266493	574	0.3572750	0.3586696	650
28	0.3926825	0.3846375	1749	0.8298001	0.8328872	548	0.3600368	0.3613764	642
29	0.3765625	0.3684582	1770	0.8359103	0.8388691	521	0.3626882	0.3639722	632
30	0.3603251	0.3521638	1790	0.8417634	0.8445928	494	0.3652282	0.3664561	623
Dec. 1	−0.3439749	−0.3357590	−1810	−0.8473572	−0.8500561	+467	−0.3676558	−0.3688271	+614
2	0.3275166	0.3192486	1830	0.8526893	0.8552566	440	0.3699699	0.3710841	604
3	0.3109653	0.3026378	1849	0.8577578	0.8601926	411	0.3721697	0.3732264	594
4	0.2942964	0.2859321	1868	0.8625608	0.8648620	382	0.3742543	0.3752532	583
5	0.2775452	0.2692367	1887	0.8670962	0.8692630	354	0.3762229	0.3771634	572
6	−0.2607070	−0.2522566	−1905	−0.8713624	−0.8733938	+325	−0.3780745	−0.3789562	+562
7	0.2437868	0.2352974	1922	0.8753574	0.8772528	295	0.3798083	0.3806308	550
8	0.2267896	0.2182647	1939	0.8790799	0.8808386	265	0.3814237	0.3821868	538
9	0.2097224	0.2011642	1956	0.8825287	0.8841501	235	0.3829202	0.3836237	525
10	0.1925902	0.1840016	1972	0.8857025	0.8871859	205	0.3842973	0.3849409	513
11	−0.1753986	−0.1667824	−1987	−0.8886001	−0.8899450	+174	−0.3855545	−0.3861380	+500
12	0.1581534	0.1495124	2002	0.8912206	0.8924268	142	0.3866913	0.3872144	487
13	0.1408602	0.1321972	2016	0.8935635	0.8946307	110	0.3877074	0.3881702	474
14	0.1235244	0.1148424	2030	0.8956283	0.8965561	79	0.3886027	0.3890050	461
15	0.1061617	0.0974535	2044	0.8974143	0.8982027	47	0.3893771	0.3897188	448
16	−0.0887478	−0.0800359	−2057	−0.8989213	−0.8995701	+ 15	−0.3900303	−0.3903114	+434
17	0.0713179	0.0625950	2069	0.9001491	0.9006583	− 17	0.3905623	0.3907828	421
18	0.0538674	0.0451362	2081	0.9010976	0.9014671	49	0.3909731	0.3911331	408
19	0.0364017	0.0276648	2092	0.9017667	0.9019965	84	0.3912628	0.3913622	393
20	0.0189259	−0.0101859	2102	0.9021564	0.9022465	120	0.3914313	0.3914701	378
21	−0.0014452	+0.0072954	−2112	−0.9022668	−0.9022172	−155	−0.3914787	−0.3914570	+364
22	+0.0160354	0.0247740	2121	0.9020978	0.9019086	190	0.3914051	0.3913229	349
23	0.0335108	0.0422449	2130	0.9016496	0.9013208	225	0.3912105	0.3910678	334
24	0.0509758	0.0597029	2137	0.9009222	0.9004539	260	0.3908949	0.3906917	318
25	0.0684255	0.0771430	2144	0.8999157	0.8993081	296	0.3904583	0.3901947	303
26	+0.0858549	+0.0945603	−2150	−0.8986307	−0.8978837	−331	−0.3899009	−0.3895769	+288
27	0.1032587	0.1119494	2156	0.8970671	0.8961809	367	0.3892228	0.3888385	272
28	0.1206317	0.1293050	2161	0.8952251	0.8941997	404	0.3884241	0.3879795	257
29	0.1379685	0.1466217	2165	0.8931047	0.8919403	440	0.3875046	0.3870000	242
30	0.1552639	0.1638944	2169	0.8907063	0.8894030	476	0.3864650	0.3858999	226
31	+0.1725129	+0.1811185	−2171	−0.8880302	−0.8865885	−513	−0.3853045	−0.3846792	+210
32	+0.1897104	+0.1982878	−2173	−0.8850771	−0.8834969	−550	−0.3840240	−0.3833387	+194

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		Day of Month.	FEBRUARY.		Day of Month.	MARCH.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	86° 42′ 43″.9	+3° 55′ 42″.1	1.0	138° 8′ 48″.2	+4° 48′ 59″.8	1.0	146° 55′ 12″.0	+4° 33′ 10″.0
1.5	94 5 27.4	4 18 12.5	1.5	144 58 39.0	4 37 8.5	1.5	153 33 31.8	4 15 10.6
2.0	101 25 55.9	4 36 17.5	2.0	151 43 20.3	4 21 31.0	2.0	160 7 56.8	3 53 56.1
2.5	108 43 8.8	4 49 42.4	2.5	158 22 36.1	4 2 29.3	2.5	166 38 16.8	3 29 49.3
3.0	115 56 9.7	4 58 19.8	3.0	164 56 17.7	3 40 27.4	3.0	173 4 25.4	3 3 14.5
3.5	123 4 9.1	+5 2 10.0	3.5	171 24 24.9	+3 15 50.3	3.5	179 26 21.0	+2 34 36.6
4.0	130 6 26.0	5 1 19.9	4.0	177 47 4.8	2 49 3.1	4.0	185 44 6.3	2 4 20.7
4.5	137 2 29.3	4 56 1.9	4.5	184 4 31.6	2 20 30.6	4.5	191 57 49.3	1 32 51.8
5.0	143 51 58.7	4 46 32.8	5.0	190 17 5.8	1 50 36.8	5.0	198 7 42.6	1 0 33.9
5.5	150 34 44.3	4 33 12.9	5.5	196 25 13.9	1 19 44.2	5.5	204 14 3.0	+0 27 49.9
6.0	157 10 46.7	+4 16 24.6	6.0	202 29 26.3	+0 48 14.7	6.0	210 17 11.8	—0 4 58.4
6.5	163 40 15.9	3 56 31.4	6.5	208 30 17.6	+0 16 28.2	6.5	216 17 33.9	0 37 30.4
7.0	170 3 29.8	3 33 57.0	7.0	214 28 25.3	—0 15 16.4	7.0	222 15 37.3	1 9 26.9
7.5	176 20 53.6	3 9 4.6	7.5	220 24 29.1	0 46 40.9	7.5	228 11 53.5	1 40 30.0
8.0	182 32 58.1	2 42 17.0	8.0	226 19 10.2	1 17 28.6	8.0	234 6 56.2	2 10 22.8
8.5	188 40 18.7	+2 13 55.8	8.5	232 13 10.1	—1 47 23.0	8.5	240 1 21.4	—2 38 49.5
9.0	194 43 34.0	1 44 21.5	9.0	238 7 11.0	2 16 8.1	9.0	245 55 46.3	3 5 34.8
9.5	200 43 24.7	1 13 53.6	9.5	244 1 54.2	2 43 28.5	9.5	251 50 49.3	3 30 23.9
10.0	206 40 33.0	0 42 50.7	10.0	249 57 59.9	3 9 8.4	10.0	257 47 9.4	3 53 2.7
10.5	212 35 41.3	+0 11 30.8	10.5	255 56 6.6	3 32 52.1	10.5	263 45 25.6	4 13 17.1
11.0	218 29 32.0	—0 19 48.8	11.0	261 56 50.4	—3 54 23.9	11.0	269 46 15.8	—4 30 52.7
11.5	224 22 46.6	0 50 51.4	11.5	268 0 44.2	4 13 27.8	11.5	275 50 17.4	4 45 36.3
12.0	230 16 4.7	1 21 20.1	12.0	274 8 17.4	4 29 48.0	12.0	281 58 5.2	4 57 13.8
12.5	236 10 3.9	1 50 58.0	12.5	280 19 54.8	4 43 8.8	12.5	288 10 11.2	5 5 31.7
13.0	242 5 20.0	2 19 28.2	13.0	286 35 56.5	4 53 14.9	13.0	294 27 4.4	5 10 17.2
13.5	248 2 24.6	—2 46 33.6	13.5	292 56 37.0	—4 59 52.0	13.5	300 49 8.8	—5 11 18.3
14.0	254 1 46.7	3 11 56.7	14.0	299 22 4.9	5 2 47.4	14.0	307 16 43.4	5 8 24.5
14.5	260 3 51.1	3 35 20.0	14.5	305 52 22.5	5 1 50.3	14.5	313 50 1.1	5 1 27.6
15.0	266 8 58.5	3 56 25.9	15.0	312 27 26.1	4 56 52.7	15.0	320 29 8.1	4 50 22.1
15.5	272 17 25.4	4 14 57.2	15.5	319 7 6.1	4 47 50.0	15.5	327 14 3.0	4 35 6.0
16.0	278 29 23.4	—4 30 37.0	16.0	325 51 7.2	—4 34 41.5	16.0	334 4 36.9	—4 15 41.7
16.5	284 45 0.0	4 43 9.6	16.5	332 39 8.9	4 17 31.0	16.5	341 0 33.0	3 52 17.0
17.0	291 4 18.0	4 52 20.5	17.0	339 30 47.2	3 56 27.3	17.0	348 1 27.3	3 25 5.0
17.5	297 27 16.2	4 57 57.0	17.5	346 25 35.2	3 31 44.3	17.5	355 6 49.0	2 54 25.2
18.0	303 53 49.4	4 59 48.7	18.0	353 23 4.1	3 3 40.6	18.0	2 16 1.4	2 20 42.9
18.5	310 23 49.5	—4 57 48.2	18.5	0 22 45.1	—2 32 39.8	18.5	9 28 23.2	—1 44 29.2
19.0	316 57 6.4	4 51 51.1	19.0	7 24 10.4	1 59 9.6	19.0	16 43 10.2	1 6 20.1
19.5	323 33 28.0	4 41 56.5	19.5	14 26 53.5	1 23 41.1	19.5	23 59 36.7	—0 26 55.3
20.0	330 12 41.2	4 28 7.4	20.0	21 30 30.7	0 46 48.4	20.0	31 16 57.3	+0 13 2.7
20.5	336 54 33.9	4 10 30.4	20.5	28 34 41.4	—0 9 7.2	20.5	38 34 28.2	0 52 50.5
21.0	343 38 54.3	—3 49 16.3	21.0	35 39 8.1	+0 28 45.9	21.0	45 51 28.3	+1 31 45.1
21.5	350 25 32.5	3 24 39.6	21.5	42 43 36.6	1 6 14.1	21.5	53 7 20.6	2 9 5.3
22.0	357 14 20.5	2 56 58.3	22.0	49 47 55.1	1 42 41.3	22.0	60 21 32.3	2 44 12.8
22.5	4 5 12.6	2 26 33.8	22.5	56 51 53.8	2 17 32.8	22.5	67 33 36.0	3 16 33.6
23.0	10 58 5.2	1 53 50.6	23.0	63 55 24.6	2 50 15.9	23.0	74 43 8.9	3 45 38.0
23.5	17 52 56.6	—1 19 16.1	23.5	70 58 20.0	+3 20 20.2	23.5	81 49 52.9	+4 11 1.5
24.0	24 49 46.4	0 43 20.0	24.0	78 0 31.9	3 47 18.6	24.0	88 53 34.0	4 32 24.7
24.5	31 48 34.9	—0 6 34.0	24.5	85 1 51.1	4 10 47.4	24.5	95 54 2.0	4 49 33.2
25.0	38 49 21.5	+0 30 28.5	25.0	92 2 7.3	4 30 26.3	25.0	102 51 9.9	5 2 17.6
25.5	45 52 4.8	1 7 13.1	25.5	99 1 8.1	4 45 59.3	25.5	109 44 53.2	5 10 33.0
26.0	52 56 40.4	+1 43 4.4	26.0	105 58 39.1	+4 57 14.6	26.0	116 35 9.2	+5 14 19.1
26.5	60 3 0.4	2 17 27.2	26.5	112 54 23.5	5 4 5.0	26.5	123 21 56.7	5 13 39.3
27.0	67 10 52.6	2 49 47.1	27.0	119 48 2.8	5 6 28.0	27.0	130 5 15.6	5 8 40.7
27.5	74 19 59.1	3 19 30.8	27.5	126 39 17.4	5 4 25.4	27.5	136 45 6.0	4 59 33.5
28.0	81 29 56.6	3 46 7.5	28.0	133 27 46.9	4 58 3.7	28.0	143 21 29.0	4 46 31.3
28.5	88 40 15.9	4 9 9.7	28.5	140 13 11.4	4 47 33.7	28.5	149 54 25.9	4 29 49.7
29.0	95 50 23.3	+4 28 14.2	29.0	146 55 12.0	+4 33 10.0	29.0	156 23 58.1	+4 9 47.0
29.5	102 59 39.4	4 43 2.3	29.5	153 33 31.8	4 15 10.6	29.5	162 50 7.6	3 46 43.3
30.0	110 7 23.0	4 53 21.3	30.0	160 7 56.8	3 53 56.1	30.0	169 12 57.1	3 21 0.1
30.5	117 12 51.0	4 59 4.4	30.5	166 38 16.8	3 29 49.3	30.5	175 32 30.0	2 53 0.2
31.0	124 15 20.6	5 0 10.7	31.0	173 4 25.4	3 3 14.5	31.0	181 48 50.6	2 23 7.1
31.5	131 14 11.8	+4 56 45.6	31.5	179 26 21.0	+2 34 36.6	31.5	188 2 4.9	+1 51 44.7

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		Day of Month.	MAY.		Day of Month.	JUNE.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	194° 12′ 20″.2	+1° 19′ 16″.9	1.0	227° 2′ 50″.5	−1° 39′ 28″.0	1.0	271° 28′ 5″.4	−4° 36′ 6″.8
1.5	200 19 45.4	0 46 7.5	1.5	232 58 44.6	2 10 1.8	1.5	277 27 3.7	4 48 52.8
2.0	206 24 31.6	+0 12 39.5	2.0	238 53 58.6	2 39 6.9	2.0	283 27 33.2	4 58 30.2
2.5	212 26 51.9	−0 20 45.0	2.5	244 48 48.5	3 6 26.2	2.5	289 29 48.6	5 4 50.6
3.0	218 27 1.9	0 53 44.7	3.0	250 43 31.9	3 31 44.0	3.0	295 34 5.8	5 7 47.2
3.5	224 25 19.1	−1 25 59.3	3.5	256 38 27.2	−3 54 45.6	3.5	301 40 42.4	−5 7 15.0
4.0	230 22 3.5	1 57 10.1	4.0	262 33 53.8	4 15 17.5	4.0	307 49 57.4	5 3 10.0
4.5	236 17 37.3	2 26 59.3	4.5	268 30 13.1	4 33 6.9	4.5	314 2 11.0	4 55 30.1
5.0	242 12 25.2	2 55 10.2	5.0	274 27 48.0	4 48 2.4	5.0	320 17 45.5	4 44 15.0
5.5	248 6 53.7	3 21 27.5	5.5	280 27 2.7	4 59 53.5	5.5	326 37 4.1	4 29 26.1
6.0	254 1 31.7	−3 45 36.5	6.0	286 28 23.3	−5 8 30.8	6.0	333 0 30.8	−4 11 6.8
6.5	259 56 49.6	4 7 23.5	6.5	292 32 16.6	5 13 45.6	6.5	339 28 30.5	3 49 22.9
7.0	265 53 19.4	4 26 35.6	7.0	298 39 11.3	5 15 30.2	7.0	346 1 27.4	3 24 22.9
7.5	271 51 34.7	4 43 0.4	7.5	304 49 36.9	5 13 38.1	7.5	352 39 44.5	2 56 18.0
8.0	277 52 9.7	4 56 25.9	8.0	311 4 3.1	5 8 3.8	8.0	359 23 42.9	2 25 23.7
8.5	283 55 38.7	−5 6 40.7	8.5	317 22 59.6	−4 58 43.3	8.5	6 13 39.9	−1 51 57.8
9.0	290 2 36.6	5 13 33.8	9.0	323 46 55.4	4 45 34.4	9.0	13 9 48.4	1 16 24.3
9.5	296 13 37.4	5 16 54.9	9.5	330 16 17.8	4 28 36.7	9.5	20 12 14.3	0 39 10.2
10.0	302 29 13.4	5 16 34.3	10.0	336 51 31.7	4 7 52.7	10.0	27 20 56.2	−0 0 48.0
10.5	308 49 54.7	5 12 23.4	10.5	343 32 58.2	3 43 28.1	10.5	34 35 42.3	+0 38 5.5
11.0	315 16 8.5	−5 4 15.2	11.0	350 20 53.6	−3 15 32.6	11.0	41 56 10.9	+1 16 49.6
11.5	321 48 18.0	4 52 4.7	11.5	357 15 28.0	2 44 20.2	11.5	49 21 48.2	1 54 40.0
12.0	328 26 41.0	4 35 49.8	12.0	4 16 44.0	2 10 10.4	12.0	56 51 48.8	2 30 51.4
12.5	335 11 29.1	4 15 31.8	12.5	11 24 35.6	1 33 28.3	12.5	64 25 15.8	3 4 38.0
13.0	342 2 47.0	3 51 16.0	13.0	18 38 46.4	0 54 45.2	13.0	72 1 2.6	3 35 16.4
13.5	349 0 31.0	−3 23 13.2	13.5	25 58 49.4	−0 14 38.0	13.5	79 37 54.5	+4 2 7.4
14.0	356 4 28.5	2 51 89.9	14.0	33 24 7.0	+0 26 11.1	14.0	87 14 32.3	4 24 37.6
14.5	3 14 17.5	2 16 59.1	14.5	40 53 50.0	1 6 55.6	14.5	94 49 35.4	4 42 21.6
15.0	10 29 27.0	1 39 39.9	15.0	48 27 0.1	1 46 46.5	15.0	102 21 45.5	4 55 2.9
15.5	17 49 17.1	1 0 18.0	15.5	56 2 30.5	2 24 54.2	15.5	109 49 50.0	5 2 33.6
16.0	25 12 59.8	−0 19 34.4	16.0	63 39 8.0	+3 0 30.8	16.0	117 12 45.6	+5 4 55.1
16.5	32 39 40.5	+0 21 45.7	16.5	71 15 36.5	3 32 52.5	16.5	124 29 39.7	5 2 16.2
17.0	40 8 19.6	1 2 54.3	17.0	78 50 40.0	4 1 21.2	17.0	131 39 52.7	4 54 52.7
17.5	47 37 54.7	1 43 2.6	17.5	86 23 5.4	4 25 26.1	17.5	138 42 57.6	4 43 5.3
18.0	55 7 22.8	2 21 23.2	18.0	93 51 45.5	4 44 45.3	18.0	145 38 40.8	4 27 18.4
18.5	62 35 42.8	+2 57 11.9	18.5	101 15 41.5	+4 59 5.2	18.5	152 27 0.5	+4 7 58.5
19.0	70 1 57.0	3 29 49.5	19.0	108 34 5.4	5 8 20.7	19.0	159 8 5.1	3 45 33.1
19.5	77 25 13.6	3 58 43.0	19.5	115 46 20.2	5 12 34.4	19.5	165 42 12.2	3 20 29.8
20.0	84 44 47.6	4 23 26.2	20.0	122 52 0.8	5 11 55.3	20.0	172 9 46.8	2 53 15.7
20.5	92 0 1.9	4 43 40.1	20.5	129 50 53.4	5 6 37.5	20.5	178 31 18.7	2 24 16.3
21.0	99 10 27.7	+4 59 12.8	21.0	136 42 54.5	+4 56 59.3	21.0	184 47 22.3	+1 53 56.2
21.5	106 15 44.8	5 9 59.3	21.5	143 28 10.0	4 43 21.5	21.5	190 58 34.0	1 22 38.7
22.0	113 15 40.9	5 15 59.9	22.0	150 6 53.4	4 26 6.6	22.0	197 5 32.1	0 50 45.5
22.5	120 10 10.5	5 17 20.2	22.5	156 39 24.7	4 5 37.9	22.5	203 8 55.0	+0 18 37.3
23.0	126 59 14.7	5 14 9.7	23.0	163 6 8.5	3 42 19.1	23.0	209 9 20.5	−0 13 26.6
23.5	133 43 0.0	+5 6 41.7	23.5	169 27 32.5	+3 16 34.0	23.5	215 7 25.4	−0 45 7.6
24.0	140 21 37.1	4 55 11.9	24.0	175 44 7.1	2 48 45.4	24.0	221 3 44.7	1 16 7.8
24.5	146 55 19.8	4 39 57.7	24.5	181 56 23.2	2 19 16.3	24.5	226 58 51.3	1 46 10.0
25.0	153 24 24.8	4 21 18.1	25.0	188 4 52.4	1 48 28.5	25.0	232 53 15.5	2 14 57.7
25.5	159 49 9.9	3 59 33.6	25.5	194 10 5.7	1 16 43.5	25.5	238 47 25.1	2 42 14.6
26.0	166 9 53.9	+3 35 5.3	26.0	200 12 33.1	+0 44 22.4	26.0	244 41 45.3	−3 7 45.2
26.5	172 26 55.8	3 8 14.6	26.5	206 12 42.8	+0 11 45.4	26.5	250 36 37.8	3 31 14.3
27.0	178 40 34.8	2 39 23.5	27.0	212 11 1.4	−0 20 47.5	27.0	256 32 22.3	3 52 27.4
27.5	184 51 9.4	2 8 54.3	27.5	218 7 53.8	0 52 56.9	27.5	262 29 15.2	4 11 10.8
28.0	190 58 57.5	1 37 9.4	28.0	224 3 42.8	1 24 23.9	28.0	268 27 30.8	4 27 11.7
28.5	197 4 16.3	1 4 30.9	28.5	229 58 49.0	1 54 50.1	28.5	274 27 21.0	4 40 18.3
29.0	203 7 22.3	+0 31 20.9	29.0	235 53 31.4	−2 23 57.5	29.0	280 28 56.1	−4 50 20.1
29.5	209 8 31.5	−0 1 58.9	29.5	241 48 7.2	2 51 28.9	29.5	286 32 24.5	4 57 8.0
30.0	215 7 59.2	0 35 7.2	30.0	247 42 52.2	3 17 8.1	30.0	292 37 54.0	5 0 34.9
30.5	221 6 0.5	1 7 43.5	30.5	253 38 1.0	3 40 39.7	30.5	298 45 31.7	5 0 34.8
31.0	227 2 50.5	1 39 28.0	31.0	259 33 47.4	4 1 48.5	31.0	304 55 24.7	4 57 4.7
31.5	232 58 44.6	−2 10 1.8	31.5	265 30 24.4	−4 20 21.7	31.5	311 7 40.3	−4 50 2.6

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		Day of Month.	AUGUST.		Day of Month.	SEPTEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	304° 55′ 24″.7	−4° 57′ 4″.7	1.0	352° 55′ 45″.9	−2° 28′ 47″.4	1.0	44° 13′ 54″.4	+2° 6′ 10″.6
1.5	311 7 40.3	4 50 2.6	1.5	359 33 4.0	1 57 20.9	1.5	51 14 51.8	2 39 57.1
2.0	317 22 27.2	4 39 29.3	2.0	6 13 18.2	1 24 2.0	2.0	58 17 20.1	3 11 25.7
2.5	323 39 54.5	4 25 27.8	2.5	12 56 34.0	0 49 16.0	2.5	65 21 9.6	3 40 5.4
3.0	330 0 13.6	4 8 3.4	3.0	19 42 58.1	−0 13 30.5	3.0	72 26 9.9	4 5 27.7
3.5	336 23 37.4	−3 47 23.6	3.5	26 32 37.2	+0 22 45.1	3.5	79 32 8.5	+4 27 7.1
4.0	342 50 20.1	3 23 38.6	4.0	33 25 37.8	0 58 59.4	4.0	86 38 50.6	4 44 42.0
4.5	349 20 37.6	2 57 1.1	4.5	40 22 4.9	1 34 40.0	4.5	93 45 58.9	4 57 54.6
5.0	355 54 47.0	2 27 46.4	5.0	47 22 0.7	2 9 13.0	5.0	100 53 12.9	5 6 31.8
5.5	2 33 6.0	1 56 12.6	5.5	54 25 24.6	2 42 4.5	5.5	108 0 8.9	5 10 25.5
6.0	9 15 51.9	−1 22 40.8	6.0	61 32 10.4	+3 12 40.4	6.0	115 6 20.7	+5 9 32.7
6.5	16 3 20.8	0 47 35.1	6.5	68 42 6.4	3 40 27.5	6.5	122 11 19.6	5 3 56.2
7.0	22 55 46.8	−0 11 22.5	7.0	75 54 54.0	4 4 54.5	7.0	129 14 35.5	4 53 43.9
7.5	29 53 19.9	+0 25 26.5	7.5	83 10 7.6	4 25 32.9	7.5	136 15 37.6	4 39 9.0
8.0	36 56 5.1	1 2 18.7	8.0	90 27 13.7	4 41 57.9	8.0	143 13 55.3	4 20 29.5
8.5	44 4 0.7	+1 38 38.2	8.5	97 45 32.0	+4 53 49.6	8.5	150 8 59.7	+3 58 7.9
9.0	51 16 57.0	2 13 46.9	9.0	105 4 16.4	5 0 53.7	9.0	157 0 24.2	3 32 29.9
9.5	58 34 34.6	2 47 5.5	9.5	112 22 35.3	5 3 2.6	9.5	163 47 45.9	3 4 3.9
10.0	65 56 23.9	3 17 54.6	10.0	119 39 35.1	5 0 15.6	10.0	170 30 46.3	2 33 20.3
10.5	73 21 44.8	3 45 36.2	10.5	126 54 21.5	4 52 39.0	10.5	177 9 11.6	2 0 49.7
11.0	80 49 46.7	+4 9 34.7	11.0	134 6 2.0	+4 40 25.7	11.0	183 42 53.5	+1 27 3.2
11.5	88 19 30.0	4 29 19.4	11.5	141 13 47.7	4 23 54.8	11.5	190 11 49.2	0 52 31.0
12.0	95 49 47.8	4 44 25.9	12.0	148 16 56.3	4 3 30.3	12.0	196 36 1.5	+0 17 41.7
12.5	103 19 28.9	4 54 36.6	12.5	155 14 52.5	3 39 39.9	12.5	202 55 38.4	−0 16 57.9
13.0	110 47 20.8	4 59 42.1	13.0	162 7 10.0	3 12 53.9	13.0	209 10 53.1	0 51 2.9
13.5	118 12 12.7	+4 59 41.5	13.5	168 53 31.3	+2 43 43.9	13.5	215 22 3.6	−1 24 11.0
14.0	125 32 58.9	4 54 42.0	14.0	175 33 48.1	2 12 41.5	14.0	221 29 31.8	1 56 2.0
14.5	132 48 41.9	4 44 58.1	14.5	182 8 0.7	1 40 17.9	14.5	227 33 43.2	2 26 17.7
15.0	139 58 34.2	4 30 50.6	15.0	188 36 18.0	1 7 2.4	15.0	233 35 6.9	2 54 42.2
15.5	147 1 59.5	4 12 44.4	15.5	194 58 56.2	+0 33 22.6	15.5	239 34 13.9	3 21 1.1
16.0	153 58 34.1	+3 51 8.2	16.0	201 16 16.8	−0 0 16.1	16.0	245 31 37.5	−3 45 1.7
16.5	160 48 5.8	3 26 31.9	16.5	207 28 47.7	0 33 30.7	16.5	251 27 52.9	4 6 32.4
17.0	167 30 33.6	2 59 26.3	17.0	213 37 0.4	1 6 0.3	17.0	257 23 36.2	4 25 22.8
17.5	174 6 7.2	2 30 21.3	17.5	219 41 29.4	1 37 26.0	17.5	263 19 23.9	4 41 23.1
18.0	180 35 4.3	1 59 45.8	18.0	225 42 51.8	2 7 30.9	18.0	269 15 52.6	4 54 24.2
18.5	186 57 50.0	+1 28 6.9	18.5	231 41 46.1	−2 35 59.4	18.5	275 13 38.4	−5 4 17.8
19.0	193 14 55.2	0 55 49.9	19.0	237 38 51.4	3 2 37.4	19.0	281 13 16.6	5 10 56.0
19.5	199 26 54.7	+0 23 17.9	19.5	243 34 46.9	3 27 11.5	19.5	287 15 21.1	5 14 11.4
20.0	205 34 26.4	−0 9 7.5	20.0	249 30 11.3	3 49 29.6	20.0	293 20 23.5	5 13 57.6
20.5	211 38 9.9	0 41 6.8	20.5	255 25 42.0	4 9 19.7	20.5	299 28 53.1	5 10 8.8
21.0	217 38 45.9	−1 12 21.8	21.0	261 21 55.0	−4 26 30.5	21.0	305 41 15.9	−5 2 40.9
21.5	223 36 54.8	1 42 35.6	21.5	267 19 24.4	4 40 51.4	21.5	311 57 54.6	4 51 31.4
22.0	229 33 16.0	2 11 32.4	22.0	273 18 41.2	4 52 12.0	22.0	318 19 7.4	4 36 39.8
22.5	235 28 27.7	2 38 56.9	22.5	279 20 13.9	5 0 22.6	22.5	324 45 7.5	4 18 8.2
23.0	241 23 6.5	3 4 34.8	23.0	285 24 27.5	5 5 14.4	23.0	331 16 3.5	3 56 2.2
23.5	247 17 46.3	−3 28 12.2	23.5	291 31 43.4	−5 6 39.7	23.5	337 51 58.5	−3 30 31.0
24.0	253 12 58.5	3 49 35.6	24.0	297 42 19.0	5 4 31.8	24.0	344 32 49.7	3 1 48.0
24.5	259 9 11.3	4 8 32.1	24.5	303 56 27.7	4 58 46.1	24.5	351 18 29.0	2 30 11.0
25.0	265 6 50.0	4 24 49.2	25.0	310 14 18.8	4 49 20.1	25.0	358 8 42.7	1 56 2.7
25.5	271 6 16.3	4 38 15.3	25.5	316 35 57.4	4 36 13.6	25.5	5 3 12.0	1 19 50.0
26.0	277 7 48.4	−4 48 39.3	26.0	323 1 24.6	−4 19 29.7	26.0	12 1 33.8	−0 42 4.2
26.5	283 11 41.2	4 55 51.4	26.5	329 30 37.8	3 59 14.6	26.5	19 3 21.2	−0 3 20.4
27.0	289 18 6.4	4 59 43.2	27.0	336 3 31.1	3 35 38.2	27.0	26 8 4.0	+0 35 43.5
27.5	295 27 12.2	5 0 7.7	27.5	342 39 56.2	3 8 54.3	27.5	33 15 10.4	1 14 28.1
28.0	301 39 4.2	4 57 0.1	28.0	349 19 42.6	2 39 20.5	28.0	40 24 7.5	1 52 13.1
28.5	307 53 45.6	4 50 17.7	28.5	356 2 38.0	2 7 18.0	28.5	47 34 22.3	2 28 19.1
29.0	314 11 17.8	−4 40 0.2	29.0	2 48 29.6	−1 33 11.8	29.0	54 45 22.2	+3 2 8.4
29.5	320 31 40.7	4 26 10.3	29.5	9 37 4.5	0 57 29.6	29.5	61 56 36.4	3 33 6.1
30.0	326 54 53.2	4 8 53.3	30.0	16 28 10.2	−0 20 42.1	30.0	69 7 36.1	4 0 41.1
30.5	333 20 54.2	3 48 17.5	30.5	23 21 34.6	+0 16 37.9	30.5	76 17 54.7	4 24 27.0
31.0	339 49 43.1	3 24 34.4	31.0	30 17 6.6	0 53 56.6	31.0	83 27 8.3	4 44 2.0
31.5	346 21 19.9	−2 57 58.6	31.5	37 14 36.3	+1 30 39.1	31.5	90 34 55.8	+4 59 9.5

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		Day of Month.	NOVEMBER.		Day of Month.	DECEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	83° 27′ 8.3″	+4° 44′ 2.0″	1.0	136° 23′ 17.3″	+4° 41′ 39.7″	1.0	173° 8′ 48.9″	+2° 12′ 1.0″
1.5	90 34 55.8	4 59 9.5	1.5	143 11 27.5	4 22 52.5	1.5	179 34 25.2	1 39 58.1
2.0	97 40 58.6	5 9 38.5	2.0	149 54 59.0	4 0 39.8	2.0	185 55 19.8	1 7 4.6
2.5	104 45 0.6	5 15 22.9	2.5	156 34 2.2	3 35 26.1	2.5	192 12 2.7	0 33 44.9
3.0	111 46 47.5	5 16 21.7	3.0	163 8 49.9	3 7 36.9	3.0	198 25 3.1	+0 0 22.1
3.5	118 46 7.1	+5 12 38.7	3.5	169 39 36.0	+2 37 38.1	3.5	204 34 49.3	−0 32 41.6
4.0	125 42 48.6	5 4 22.1	4.0	176 6 35.3	2 5 56.0	4.0	210 41 48.0	1 5 5.2
4.5	132 36 42.6	4 51 44.4	4.5	182 30 2.5	1 32 56.7	4.5	216 46 23.8	1 36 28.9
5.0	139 27 40.6	4 35 1.5	5.0	188 50 12.2	0 59 6.2	5.0	222 48 58.8	2 6 34.1
5.5	146 15 34.8	4 14 32.7	5.5	195 7 18.0	+0 24 49.9	5.5	228 49 53.0	2 35 3.2
6.0	153 0 18.5	+3 50 40.4	6.0	201 21 32.8	−0 9 27.3	6.0	234 49 23.9	−3 1 39.7
6.5	159 41 45.4	3 23 49.1	6.5	207 33 8.7	0 43 21.6	6.5	240 47 46.9	3 26 8.4
7.0	166 19 50.3	2 54 25.2	7.0	213 42 16.8	1 16 30.2	7.0	246 45 15.6	3 48 15.3
7.5	172 54 28.8	2 22 56.3	7.5	219 49 7.9	1 48 31.6	7.5	252 42 1.9	4 7 47.6
8.0	179 25 37.6	1 49 51.0	8.0	225 53 52.3	2 19 5.6	8.0	258 38 17.2	4 24 35.3
8.5	185 53 14.9	+1 15 37.9	8.5	231 56 40.3	−2 47 53.7	8.5	264 34 11.6	−4 38 28.1
9.0	192 17 20.4	0 40 45.3	9.0	237 57 42.7	3 14 39.0	9.0	270 29 55.0	4 49 18.5
9.5	198 37 56.0	+0 5 40.9	9.5	243 57 10.6	3 39 6.6	9.5	276 25 38.2	4 57 0.2
10.0	204 55 5.2	−0 29 8.9	10.0	249 55 16.4	4 1 3.0	10.0	282 21 32.3	5 1 28.7
10.5	211 8 54.2	1 3 19.4	10.5	255 52 13.6	4 20 16.8	10.5	288 17 49.9	5 2 41.0
11.0	217 19 31.7	−1 36 27.6	11.0	261 48 17.5	−4 36 38.1	11.0	294 14 45.2	−5 0 35.8
11.5	223 27 8.8	2 8 12.5	11.5	267 43 45.0	4 49 58.6	11.5	300 12 34.2	4 55 13.2
12.0	229 31 58.7	2 38 15.0	12.0	273 38 55.1	5 0 11.6	12.0	306 11 35.8	4 46 34.7
12.5	235 34 18.3	3 6 18.3	12.5	279 34 9.4	5 7 11.7	12.5	312 12 10.8	4 34 43.3
13.0	241 34 26.8	3 32 7.4	13.0	285 29 51.5	5 10 54.7	13.0	318 14 43.1	4 19 43.3
13.5	247 32 45.6	−3 55 29.2	13.5	291 26 27.2	−5 11 17.7	13.5	324 19 39.0	−4 1 40.4
14.0	253 29 40.0	4 16 12.3	14.0	297 24 24.6	5 8 18.8	14.0	330 27 26.9	3 40 41.6
14.5	259 25 35.2	4 34 6.8	14.5	303 24 13.9	5 1 57.1	14.5	336 38 37.8	3 16 55.5
15.0	265 21 0.3	4 49 3.6	15.0	309 26 26.9	4 52 12.7	15.0	342 53 44.3	2 50 32.6
15.5	271 16 26.1	5 0 55.7	15.5	315 31 37.5	4 39 6.6	15.5	349 13 19.7	2 21 45.1
16.0	277 12 24.5	−5 9 36.3	16.0	321 40 19.8	−4 22 41.2	16.0	355 37 58.0	−1 50 47.6
16.5	283 9 29.4	5 14 59.2	16.5	327 53 8.9	4 3 0.4	16.5	2 8 12.3	1 17 57.3
17.0	289 8 14.6	5 16 59.6	17.0	334 10 39.5	3 40 9.9	17.0	8 44 33.6	0 43 34.1
17.5	295 9 15.3	5 15 33.0	17.5	340 33 25.2	3 14 17.5	17.5	15 27 29.6	−0 8 1.7
18.0	301 13 6.4	5 10 35.8	18.0	347 1 57.3	2 45 33.7	18.0	22 17 22.9	+0 28 12.9
18.5	307 20 22.2	−5 2 5.3	18.5	353 36 44.3	−2 14 12.1	18.5	29 14 29.1	+1 4 38.8
19.0	313 31 35.9	4 50 0.1	19.0	0 18 9.7	1 40 30.0	19.0	36 18 54.9	1 40 41.3
19.5	319 47 19.0	4 34 20.4	19.5	7 6 31.0	1 4 49.2	19.5	43 30 35.7	2 15 42.5
20.0	326 8 0.2	4 15 8.4	20.0	14 1 58.2	−0 27 36.1	20.0	50 49 14.5	2 49 1.9
20.5	332 34 4.8	3 52 28.3	20.5	21 4 31.8	+0 10 38.2	20.5	58 14 20.3	3 19 57.2
21.0	339 5 53.7	−3 26 27.9	21.0	28 14 2.0	+0 49 17.8	21.0	65 45 7.6	+3 47 46.4
21.5	345 43 42.4	2 57 18.5	21.5	35 30 7.1	1 27 42.5	21.5	73 20 36.3	4 11 50.3
22.0	352 27 40.2	2 25 15.7	22.0	42 52 13.2	2 5 8.6	22.0	80 59 34.1	4 31 33.3
22.5	359 17 49.2	1 50 39.8	22.5	50 19 33.7	2 40 50.6	22.5	88 40 38.1	4 46 25.6
23.0	6 14 3.6	1 13 56.0	23.0	57 51 10.3	3 14 2.9	23.0	96 22 18.6	4 56 6.9
23.5	13 16 9.2	−0 35 34.7	23.5	65 25 55.1	+3 44 1.8	23.5	104 3 3.8	+5 0 25.6
24.0	20 23 42.9	+0 3 48.8	24.0	73 2 32.0	4 10 7.8	24.0	111 41 23.9	4 59 19.7
24.5	27 36 13.1	0 43 35.0	24.5	80 39 40.4	4 31 47.2	24.5	119 15 55.2	4 52 57.2
25.0	34 53 0.4	1 23 1.0	25.0	88 15 59.6	4 48 34.4	25.0	126 45 24.1	4 41 34.9
25.5	42 13 17.8	2 1 22.4	25.5	95 50 10.5	5 0 12.8	25.5	134 8 50.1	4 25 36.2
26.0	49 36 12.8	+2 37 54.6	26.0	103 21 0.5	+5 6 34.3	26.0	141 25 27.3	+4 5 30.5
26.5	57 0 49.0	3 11 54.4	26.5	110 47 26.2	5 7 40.1	26.5	148 34 44.6	3 41 50.5
27.0	64 26 8.0	3 42 42.1	27.0	118 8 35.4	5 3 39.2	27.0	155 36 25.4	3 15 10.3
27.5	71 51 11.3	4 9 42.9	27.5	125 23 48.3	4 54 47.5	27.5	162 30 26.6	2 46 4.6
28.0	79 15 3.0	4 32 27.9	28.0	132 32 37.5	4 41 25.9	28.0	169 16 56.6	2 15 7.0
28.5	86 36 51.4	4 50 35.4	28.5	139 34 48.1	4 23 59.6	28.5	175 56 13.3	1 42 49.4
29.0	93 55 50.7	+5 3 51.1	29.0	146 30 16.2	+4 2 55.9	29.0	182 28 42.3	+1 9 41.8
29.5	101 11 22.1	5 12 7.7	29.5	153 19 7.7	3 38 43.4	29.5	188 54 54.4	0 36 11.5
30.0	108 22 54.3	5 15 24.7	30.0	160 1 36.1	3 11 51.1	30.0	195 15 24.3	+0 2 43.5
30.5	115 30 4.0	5 13 47.6	30.5	166 38 1.7	2 42 47.6	30.5	201 30 49.2	−0 30 19.2
31.0	122 32 35.8	5 7 27.0	31.0	173 8 48.9	2 12 1.0	31.0	207 41 46.9	1 2 36.1
31.5	129 30 21.0	+4 56 38.2	31.5	179 34 25.2	+1 39 58.1	31.5	213 48 55.0	−1 33 48.2

FOR GREENWICH MEAN NOON.

Date.		THE MOON'S EQUATOR.			☾ Mean Longitude of the Moon.
		i Inclination to Earth's Equator.	Δ Ascend'g Node on Earth's Equator to Ascending Node on Ecliptic.	☊ Ascend'g Node on Earth's Equator.	
Jan.	0	22° 15′.1	216° 34′.4	357° 47′.1	71° 34′.3
	10	22 14.6	216 1.0	357 48.8	203 20.2
	20	22 14.1	215 27.6	357 50.6	335 6.0
	30	22 13.6	214 54.2	357 52.4	106 51.8
Feb.	9	22 13.1	214 20.8	357 54.2	238 37.7
	19	22 12.7	213 47.4	357 56.0	10 23.5
March	1	22 12.2	213 13.9	357 57.8	142 9.3
	11	22 11.8	212 40.4	357 59.7	273 55.2
	21	22 11.4	212 7.0	358 1.5	45 41.0
	31	22 10.9	211 33.5	358 3.3	177 26.9
April	10	22 10.5	211 0.1	358 5.1	309 12.7
	20	22 10.1	210 26.6	358 7.0	80 58.5
	30	22 9.7	209 53.1	358 8.9	212 44.4
May	10	22 9.3	209 19.6	358 10.8	344 30.2
	20	22 8.9	208 46.0	358 12.7	116 16.0
	30	22 8.5	208 12.5	358 14.6	248 1.9
June	9	22 8.1	207 39.0	358 16.5	19 47.7
	19	22 7.8	207 5.4	358 18.5	151 33.5
	29	22 7.4	206 31.8	358 20.4	283 19.4
July	9	22 7.0	205 58.3	358 22.3	55 5.2
	19	22 6.6	205 24.7	358 24.3	186 51.1
	29	22 6.2	204 51.1	358 26.2	318 36.9
Aug.	8	22 5.9	204 17.5	358 28.2	90 22.7
	18	22 5.5	203 43.9	358 30.2	222 8.6
	28	22 5.2	203 10.3	358 32.2	353 54.4
Sept.	7	22 4.9	202 36.7	358 34.2	125 40.2
	17	22 4.6	202 3.0	358 36.2	257 26.1
	27	22 4.3	201 29.4	358 38.3	29 11.9
Oct.	7	22 4.0	200 55.7	358 40.3	160 57.7
	17	22 3.7	200 22.0	358 42.4	292 43.6
	27	22 3.5	199 48.4	358 44.4	64 29.4
Nov.	6	22 3.2	199 14.7	358 46.4	196 15.3
	16	22 3.0	198 41.0	358 48.5	328 1.1
	26	22 2.7	198 7.3	358 50.6	99 46.9
Dec.	6	22 2.5	197 33.6	358 52.7	231 32.8
	16	22 2.2	197 0.0	358 54.8	3 18.6
	26	22 2.0	196 26.3	358 56.9	135 4.4
	36	22 1.8	195 52.6	358 59.0	266 50.3

Mean Solar Days.	Motion of ☾
0.1	1° 19′.06
0.2	2 38.12
0.3	3 57.18
0.4	5 16.23
0.5	6 35.29
0.6	7 54.35
0.7	9 13.41
0.8	10 32.47
0.9	11 51.53
1.0	13 10.58
2.0	26 21.17
3.0	39 31.75
4.0	52 42.33
5.0	65 52.92
6.0	79 3.50
7.0	92 14.09
8.0	105 24.67
9.0	118 35.25
10.0	131 45.84
Hours.	
1	0° 32′.94
2	1 5.88
3	1 38.82
4	2 11.76
5	2 44.70
6	3 17.65
7	3 50.59
8	4 23.53
9	4 56.47
10	5 29.41
11	6 2.35
12	6 35.29
13	7 8.23
14	7 41.17
15	8 14.11
16	8 47.06
17	9 20.00
18	9 52.94
19	10 25.68
20	10 58.82
21	11 31.76
22	12 4.70
23	12 37.64

TABLE FOR THE LIBRATION OF THE MOON.

Argument, (☊—λ) or (☊—λ — 180°).

☊ − λ	Δλ	$\frac{1}{a}$	B		☊ − λ	Δλ	$\frac{1}{a}$	B	
0°	0′.0	39	0° 0′.0	180°	46°	0′.6	56	1° 3′.9	134°
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					
	Δλ	$\frac{1}{a}$	B	☊ − λ		Δλ	$\frac{1}{a}$	B	☊ − λ

Δλ has the sign of tan (λ — ☊)
a has the sign of cos (☊ — λ)
B has the sign of sin (☊ — λ)

FOR GREENWICH MEAN NOON.

Date.	Apparent Obliquity of the Ecliptic. (Hansen.)	Equation of Equinoxes		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Par.	
	° ′ ″	″	s	″	″	″	° ′
Jan. 0	23 27 18.42	− 9.15	− 0.560	0.00	− 20.80	9.00	34 31.9
10	18.55	8.64	0.528	1.38	20.79	9.00	34 0.1
20	18.72	8.24	0.504	2.75	20.77	8.99	33 28.3
30	18.93	7.98	0.488	4.13	20.74	8.98	32 56.5
Feb. 9	19.16	7.86	0.481	5.50	20.71	8.96	32 24.8
19	23 27 19.37	− 7.89	− 0.483	6.88	− 20.67	8.94	31 53.0
Mar. 1	19.54	8.04	0.492	8.26	20.63	8.92	31 21.2
11	19.65	8.28	0.506	9.63	20.57	8.90	30 49.5
21	19.70	8.57	0.524	11.01	20.51	8.87	30 17.7
31	19.68	8.85	0.541	12.38	20.45	8.85	29 45.9
April 10	23 27 19.61	− 9.08	− 0.555	13.76	− 20.39	8.82	29 14.1
20	19.50	9.19	0.562	15.14	20.34	8.80	28 42.4
30	19.35	9.19	0.562	16.51	20.29	8.78	28 10.6
May 10	19.20	9.05	0.553	17.89	20.24	8.76	27 38.8
20	19.06	8.77	0.536	19.26	20.19	8.74	27 7.0
30	23 27 18.94	− 8.37	− 0.512	20.64	− 20.16	8.72	26 35.3
June 9	18.87	7.88	0.482	22.02	20.13	8.71	26 3.5
19	18.85	7.34	0.449	23.39	20.11	8.71	25 31.7
29	18.88	6.79	0.415	24.77	20.11	8.70	25 0.0
July 9	18.97	6.27	0.383	26.14	20.10	8.70	24 28.2
19	23 27 19.12	− 5.84	− 0.357	27.52	− 20.12	8.71	23 56.4
29	19.31	5.51	0.337	28.90	20.14	8.72	23 24.6
Aug. 8	19.51	5.32	0.325	30.27	20.17	8.73	22 52.9
18	19.70	5.26	0.322	31.65	20.20	8.75	22 21.1
28	19.87	5.32	0.325	33.02	20.24	8.77	21 49.3
Sept. 7	23 27 20.00	− 5.51	− 0.337	34.40	− 20.29	8.79	21 17.5
17	20.08	5.74	0.351	35.78	20.35	8.81	20 45.8
27	20.10	6.02	0.368	37.15	20.41	8.84	20 14.0
Oct. 7	20.06	6.27	0.383	38.53	20.47	8.87	19 42.2
17	19.96	6.46	0.395	39.90	20.53	8.88	19 10.5
27	23 27 19.81	− 6.54	− 0.400	41.28	− 20.59	8.91	18 38.7
Nov. 6	19.64	6.47	0.396	42.66	20.64	8.93	18 6.9
16	19.48	6.25	0.382	44.03	20.69	8.95	17 35.1
26	19.32	5.89	0.360	45.41	20.73	8.97	17 3.4
Dec. 6	19.20	5.42	0.331	46.78	20.76	8.98	16 31.6
16	23 27 19.15	− 4.87	− 0.298	48.16	− 20.78	8.99	15 59.8
26	19.16	4.29	0.261	49.54	20.79	9.00	15 28.1
36	23 27 19.23	− 3.70	− 0.226	50.91	− 20.79	9.00	14 56.3

Mean Obliquity, 1893.0,	**23° 27′ 11″.30**	**(Hansen).**	
Mean Obliquity, 1893.0,	**23° 27′ 11″.01**	**(Peters).**	
Precession for 1893.0	**50″.2623**	**log**	**= 1.70124**
Precession in a Solar Day	**0″.1376**	**log**	**= 9.13865**
Precession in a Sidereal Day	**0″.1372**	**log**	**= 9.13746**
Sun's Mean Equatorial Horizontal Parallax .	**8″.848**	**log**	**= 0.94685**

Daily Motion of ☊

—3′.177

PART II

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USING THE NOTATION OF BESSEL, AND THE CONSTANTS OF PETERS AND STRUVE.

NOTATION.

τ, the time, reckoned in units of one year, from the beginning of the Besselian fictitious year, (1892, December 30d.407 = 1893, January 0d.0—0d.593, Washington mean time),
α_0, δ_0, the star's mean right ascension and declination at the beginning of the fictitious year,
α, δ, the star's apparent right ascension and declination at the time τ,
μ, μ', the annual proper motion in right ascension and declination,
$\odot$, the sun's true longitude,
Ω, the longitude of the moon's ascending node,
ω, the obliquity of the ecliptic,
Γ, the longitude of the sun's perigee,
Γ', the longitude of the moon's perigee,
☾, the moon's mean longitude

BESSELIAN STAR-NUMBERS.

$$
\begin{aligned}
A = \tau & - 0.34249 \sin \Omega & & - 0.00011 \sin (3 \odot - \Gamma) \\
& + 0.00410 \sin 2 \Omega & & - 0.00005 \sin 2 (\odot - \Omega) \\
& - 0.02521 \sin 2 \odot & & + 0.00010 \sin 2 (\odot - \Gamma') \\
& + 0.00293 \sin (\odot + 82^\circ\, 4') & & + 0.00009 \sin (2 \Gamma' - \Omega) \\
& + 0.00025 \sin (2 \odot - \Omega) & & + 0.00005 \cos \Gamma' \\
& - 0.00405 \sin 2 \text{☾} & & + 0.00004 \sin 2 \Gamma' \\
& + 0.00135 \sin (\text{☾} - \Gamma') & &
\end{aligned}
$$

$$
\begin{aligned}
B = & - 9''.2239 \cos \Omega & & - 0''.0027 \cos (3 \odot - \Gamma) \\
& + 0.0895 \cos 2 \Omega & & + 0.0067 \cos (2 \odot - \Omega) \\
& - 0.5506 \cos 2 \odot & & + 0.0024 \cos (2 \Gamma' - \Omega) \\
& - 0.0092 \cos (\odot + 281^\circ\, 3') & & - 0.0023 \sin \Gamma' \\
& - 0.0886 \cos 2 \text{☾} & & + 0.0008 \cos 2 \Gamma'
\end{aligned}
$$

$$C = - 20''.4451 \cos \omega \cos \odot$$
$$D = - 20.4451 \sin \odot$$
$$E = - 0.0461 \sin \Omega + 0''.0014 \sin 2 \Omega - 0''.0033 \sin 2 \odot$$

Bessel's *Star-Constants.*

$$a = 3^s.07257 + 1^s.33687 \sin \alpha_0 \tan \delta_0 = \text{precession in right ascension}$$
$$b = \tfrac{1}{15} \cos \alpha_0 \tan \delta_0$$
$$c = \tfrac{1}{15} \cos \alpha_0 \sec \delta_0$$
$$d = \tfrac{1}{15} \sin \alpha_0 \sec \delta_0$$
$$a' = 20''.0531 \cos \alpha_0 = \text{precession in declination}$$
$$b' \doteq - \sin \alpha_0$$
$$c' = \tan \omega \cos \delta_0 - \sin \alpha_0 \sin \delta_0$$
$$d' = \cos \alpha_0 \sin \delta_0$$

Reduction to Apparent Position.

$$\alpha = \alpha_0 + \tau\mu + Aa + Bb + Cc + Dd + \tfrac{1}{15} E \qquad \text{(in time)}$$
$$\delta = \delta_0 + \tau\mu' + Aa' + Bb' + Cc' + Dd' \qquad \text{(in arc)}$$

INDEPENDENT STAR-NUMBERS.

$$f = 46''.0883\, A + E \text{ (in arc)} = 3^s.07257\, A + \tfrac{1}{15} E \text{ (in time)}$$

$$
\begin{aligned}
g \sin G &= B & \qquad h \sin H &= C & \qquad i &= C \tan \omega \\
g \cos G &= 20''.0531\, A & \qquad h \cos H &= D & &
\end{aligned}
$$

Reduction to Apparent Position.

$$\alpha = \alpha_0 + f + \tau\mu + \tfrac{1}{15} g \sin (G + \alpha_0) \tan \delta_0 + \tfrac{1}{15} h \sin (H + \alpha_0) \sec \delta_0 \qquad \text{(in time)}$$
$$\delta = \delta_0 + \tau\mu' + g \cos (G + \alpha_0) + h \cos (H + \alpha_0) \sin \delta_0 + i \cos \delta_0 \qquad \text{(in arc)}$$

NOTES.—(1) The independent star-numbers are more convenient, when only one or two apparent positions of a star are required, or when BESSEL's star-constants are not known with sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient.

(2) In using the star-constants of the *British Association Catalogue*, a, b, c, d, a', b', c', d', must be changed to c, d, a, b, $-c'$, $-d'$, $-a'$, $-b'$, respectively.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.
Jan. 0	−9.2506	−0.8430	−0.5570	+1.3024	Feb. 15	−8.3404	−0.9057	−1.2006	+1.0371
1	9.2358	0.8436	0.5947	1.3008	16	8.3086	0.9086	1.2053	1.0247
2	9.2210	0.8453	0.6294	1.2991	17	8.2849	0.9107	1.2098	1.0118
3	9.2071	0.8460	0.6611	1.2972	18	8.2634	0.9118	1.2142	0.9984
(7^{h}.0) 4	9.1961	0.8513	0.6906	1.2952	(10^{h}.0) 19	8.2355	0.9120	1.2184	0.9845
5	−9.1863	−0.8546	−0.7182	+1.2930	20	−8.1911	−0.9114	−1.2224	+0.9699
6	9.1779	0.8575	0.7440	1.2907	21	8.1162	0.9103	1.2262	0.9546
7	9.1724	0.8596	0.7682	1.2882	22	7.9983	0.9093	1.2299	0.9387
8	9.1671	0.8606	0.7910	1.2856	23	7.7627	0.9087	1.2334	0.9221
9	9.1616	0.8606	0.8125	1.2828	24	−7.1430	0.9089	1.2367	0.9048
10	−9.1546	−0.8597	−0.8329	+1.2799	25	+7.4900	−0.9100	−1.2398	+0.8867
11	9.1453	0.8584	0.8524	1.2768	26	7.8597	0.9121	1.2428	0.8675
12	9.1332	0.8572	0.8710	1.2736	27	8.0315	0.9148	1.2457	0.8472
13	9.1183	0.8565	0.8885	1.2702	28	8.1271	0.9178	1.2485	0.8258
14	9.1012	0.8568	0.9050	1.2666	Mar. 1	8.1798	0.9206	1.2511	0.8032
15	−9.0829	−0.8582	−0.9206	+1.2628	2	+8.2052	−0.9229	−1.2536	+0.7793
16	9.0647	0.8606	0.9357	1.2589	3	8.2159	0.9243	1.2559	0.7538
17	9.0477	0.8639	0.9502	1.2548	4	8.2227	0.9247	1.2580	0.7267
18	9.0331	0.8675	0.9642	1.2505	5	8.2355	0.9242	1.2599	0.6975
(8^{h}.0) 19	9.0212	0.8710	0.9777	1.2461	(11^{h}.0) 6	8.2620	0.9231	1.2617	0.6662
20	−9.0119	−0.8739	−0.9907	+1.2415	7	+8.3040	−0.9216	−1.2634	+0.6324
21	9.0041	0.8759	1.0032	1.2367	8	8.3587	0.9203	1.2649	0.5956
22	8.9963	0.8768	1.0152	1.2317	9	8.4179	0.9196	1.2663	0.5549
23	8.9869	0.8768	1.0266	1.2265	10	8.4756	0.9197	1.2676	0.5102
24	8.9745	0.8761	1.0375	1.2211	11	8.5271	0.9207	1.2688	0.4603
25	−8.9578	−0.8751	−1.0479	+1.2155	12	+8.5689	−0.9225	−1.2699	+0.4037
26	8.9366	0.8743	1.0580	1.2097	13	8.6003	0.9249	1.2708	0.3385
27	8.9108	0.8742	1.0678	1.2037	14	8.6219	0.9274	1.2715	0.2617
28	8.8817	0.8750	1.0773	1.1974	15	8.6349	0.9296	1.2721	0.1682
29	8.8508	0.8770	1.0865	1.1909	16	8.6416	0.9311	1.2725	0.0489
30	−8.8207	−0.8798	−1.0954	+1.1842	17	+8.6462	−0.9317	−1.2728	+9.8833
31	8.7934	0.8833	1.1040	1.1773	18	8.6520	0.9314	1.2730	9.6129
Feb. 1	8.7713	0.8869	1.1122	1.1701	19	8.6620	0.9302	1.2731	+8.7310
2	8.7552	0.8903	1.1201	1.1626	20	8.6790	0.9284	1.2731	−9.4732
3	8.7444	0.8929	1.1277	1.1549	(12^{h}.0) 21	8.7027	0.9265	1.2729	9.8141
(9^{h}.0) 4	−8.7364	−0.8947	−1.1350	+1.1469	22	+8.7316	−0.9249	−1.2726	−0.0022
5	8.7283	0.8952	1.1421	1.1386	23	8.7629	0.9240	1.2722	0.1326
6	8.7171	0.8950	1.1490	1.1300	24	8.7936	0.9239	1.2716	0.2330
7	8.7002	0.8942	1.1556	1.1211	25	8.8214	0.9248	1.2709	0.3141
8	8.6755	0.8933	1.1620	1.1119	26	8.8439	0.9263	1.2701	0.3826
9	−8.6416	−0.8927	−1.1682	+1.1023	27	+8.8606	−0.9283	−1.2692	−0.4413
10	8.5988	0.8929	1.1741	1.0924	28	8.8717	0.9303	1.2681	0.4929
11	8.5482	0.8940	1.1798	1.0821	29	8.8777	0.9318	1.2669	0.5389
12	8.4922	0.8961	1.1853	1.0714	30	8.8802	0.9326	1.2655	0.5804
13	8.4359	0.8990	1.1906	1.0604	31	8.8813	0.9324	1.2640	0.6181
14	−8.3840	−0.9023	−1.1957	+1.0490	Apr. 1	+8.8834	−0.9313	−1.2623	−0.6526
15	−8.3404	−0.9057	−1.2006	+1.0371	2	+8.8883	−0.9295	−1.2605	−0.6845

E = − 0″.02

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A.*	Log *B.*	Log *C.*	Log *D.*	Solar Day. (Sid. Hour.)	Log *A.*	Log *B.*	Log *C.*	Log *D.*
Apr. 1	+8.8834	−0.9313	−1.2623	−0.6526	May 17	+9.3089	−0.8942	−1.0040	−1.2364
2	8.8883	0.9295	1.2605	0.6845	18	9.3203	0.8937	0.9923	1.2410
3	8.8972	0.9271	1.2586	0.7140	19	9.3310	0.8941	0.9802	1.2454
4	8.9105	0.9248	1.2566	0.7415	20	9.3401	0.8953	0.9677	1.2496
(13^h.0) 5	8.9275	0.9230	1.2545	0.7673	(16^h.0) 21	9.3474	0.8969	0.9547	1.2536
6	+8.9461	−0.9219	−1.2522	−0.7915	22	+9.3529	−0.8984	−0.9411	−1.2575
7	8.9647	0.9218	1.2498	0.8142	23	9.3569	0.8994	0.9269	1.2612
8	8.9819	0.9225	1.2472	0.8357	24	9.3600	0.8993	0.9122	1.2648
9	8.9959	0.9239	1.2445	0.8560	25	9.3629	0.8983	0.8969	1.2683
10	9.0066	0.9255	1.2417	0.8755	26	9.3664	0.8965	0.8808	1.2717
11	+9.0138	−0.9269	−1.2387	−0.8940	27	+9.3709	−0.8939	−0.8639	−1.2749
12	9.0184	0.9279	1.2356	0.9116	28	9.3769	0.8912	0.8462	1.2779
13	9.0216	0.9280	1.2323	0.9283	29	9.3843	0.8886	0.8278	1.2807
14	9.0248	0.9271	1.2288	0.9442	30	9.3927	0.8867	0.8086	1.2834
15	9.0297	0.9253	1.2252	0.9592	31	9.4016	0.8858	0.7881	1.2859
16	+9.0372	−0.9229	−1.2215	−0.9737	June 1	+9.4104	−0.8860	−0.7665	−1.2883
17	9.0480	0.9202	1.2176	0.9877	2	9.4185	0.8871	0.7437	1.2906
18	9.0619	0.9177	1.2135	1.0012	3	9.4255	0.8888	0.7196	1.2928
19	9.0778	0.9157	1.2092	1.0141	4	9.4311	0.8907	0.6939	1.2949
20	9.0944	0.9146	1.2048	1.0265	(17^h.0) 5	9.4355	0.8924	0.6664	1.2968
(14^h.0) 21	+9.1105	−0.9145	−1.2002	−1.0384	6	+9.4390	−0.8934	−0.6370	−1.2986
22	9.1245	0.9152	1.1954	1.0499	7	9.4421	0.8934	0.6053	1.3003
23	9.1359	0.9164	1.1905	1.0609	8	9.4455	0.8924	0.5710	1.3018
24	9.1443	0.9178	1.1854	1.0715	9	9.4497	0.8907	0.5336	1.3032
25	9.1499	0.9189	1.1801	1.0817	10	9.4549	0.8884	0.4926	1.3044
26	+9.1535	−0.9194	−1.1746	−1.0916	11	+9.4615	−0.8860	−0.4472	−1.3055
27	9.1560	0.9190	1.1689	1.1011	12	9.4691	0.8840	0.3963	1.3065
28	9.1586	0.9175	1.1630	1.1103	13	9.4774	0.8829	0.3386	1.3075
29	9.1624	0.9153	1.1569	1.1192	14	9.4859	0.8827	0.2719	1.3084
30	9.1684	0.9125	1.1506	1.1278	15	9.4939	0.8836	0.1928	1.3091
May 1	+9.1766	−0.9096	−1.1442	−1.1361	16	+9.5011	−0.8854	−0.0961	−1.3096
2	9.1870	0.9070	1.1375	1.1442	17	9.5071	0.8877	9.9709	1.3100
3	9.1988	0.9051	1.1305	1.1520	18	9.5118	0.8900	9.7943	1.3103
4	9.2110	0.9042	1.1233	1.1595	19	9.5153	0.8919	−9.4920	1.3105
5	9.2229	0.9043	1.1158	1.1667	(18^h.0) 20	9.5182	0.8931	+7.1271	1.3105
(15^h.0) 6	+9.2335	−0.9051	−1.1080	−1.1736	21	+9.5206	−0.8932	+9.4957	−1.3104
7	9.2417	0.9065	1.1000	1.1803	22	9.5232	0.8925	9.7964	1.3102
8	9.2482	0.9078	1.0918	1.1868	23	9.5265	0.8909	9.9718	1.3099
9	9.2530	0.9087	1.0834	1.1931	24	9.5306	0.8890	0.0966	1.3096
10	9.2566	0.9089	1.0747	1.1992	25	9.5357	0.8871	0.1932	1.3092
11	+9.2601	−0.9081	−1.0656	−1.2051	26	+9.5417	−0.8858	+0.2721	−1.3086
12	9.2643	0.9064	1.0562	1.2108	27	9.5482	0.8855	0.3387	1.3078
13	9.2698	0.9038	1.0465	1.2163	28	9.5547	0.8862	0.3964	1.3068
14	9.2772	0.9009	1.0364	1.2216	29	9.5608	0.8878	0.4471	1.3057
15	9.2865	0.8980	1.0260	1.2267	30	9.5662	0.8903	0.4925	1.3045
16	+9.2973	−0.8956	−1.0152	−1.2316	July 1	+9.5706	−0.8931	+0.5334	−1.3032
17	+9.3089	−0.8942	−1.0040	−1.2364	2	+9.5741	−0.8957	+0.5707	−1.3018

E = − 0.″02

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
July 1	+9.5706	−0.8931	+0.5334	−1.3032	Aug. 16	+9.7152	−0.9396	+1.1837	−1.0746
2	9.5741	0.8957	0.5707	1.3018	17	9.7166	0.9388	1.1888	1.0642
3	9.5768	0.8978	0.6049	1.3003	18	9.7186	0.9378	1.1938	1.0535
4	9.5791	0.8990	0.6366	1.2987	19	9.7212	0.9370	1.1986	1.0424
5	9.5814	0.8993	0.6659	1.2969	$(22^h.0)$ 20	9.7244	0.9367	1.2032	1.0308
$(19^h.0)$ 6	+9.5842	−0.8987	+0.6933	−1.2950	21	+9.7277	−0.9373	+1.2076	−1.0187
7	9.5877	0.8974	0.7190	1.2930	22	9.7310	0.9388	1.2118	1.0061
8	9.5920	0.8959	0.7431	1.2908	23	9.7340	0.9411	1.2159	0.9930
9	9.5973	0.8946	0.7658	1.2885	24	9.7364	0.9439	1.2199	0.9792
10	9.6032	0.8941	0.7874	1.2861	25	9.7382	0.9468	1.2237	0.9648
11	+9.6094	−0.8945	+0.8078	−1.2836	26	+9.7393	−0.9493	+1.2273	−0.9498
12	9.6154	0.8959	0.8271	1.2809	27	9.7400	0.9512	1.2307	0.9341
13	9.6208	0.8982	0.8454	1.2780	28	9.7405	0.9523	1.2340	0.9178
14	9.6254	0.9012	0.8629	1.2750	29	9.7412	0.9524	1.2371	0.9010
15	9.6291	0.9043	0.8797	1.2718	30	9.7422	0.9518	1.2401	0.8837
16	+9.6318	−0.9071	+0.8958	−1.2685	31	+9.7438	−0.9507	+1.2430	−0.8654
17	9.6338	0.9092	0.9113	1.2651	Sept. 1	9.7459	0.9495	1.2458	0.8460
18	9.6353	0.9104	0.9261	1.2616	2	9.7490	0.9486	1.2485	0.8255
19	9.6368	0.9106	0.9403	1.2579	3	9.7523	0.9483	1.2510	0.8036
20	9.6389	0.9101	0.9539	1.2541	$(23^h.0)$ 4	9.7557	0.9489	1.2533	0.7805
$(20^h.0)$ 21	+9.6415	−0.9090	+0.9669	−1.2501	5	+9.7589	−0.9503	+1.2555	−0.7559
22	9.6448	0.9079	0.9794	1.2459	6	9.7617	0.9525	1.2576	0.7297
23	9.6489	0.9072	0.9913	1.2415	7	9.7638	0.9550	1.2595	0.7017
24	9.6533	0.9072	1.0026	1.2369	8	9.7653	0.9574	1.2613	0.6716
25	9.6581	0.9081	1.0136	1.2322	9	9.7661	0.9594	1.2630	0.6391
26	+9.6625	−0.9101	+1.0243	−1.2273	10	+9.7666	−0.9607	+1.2646	−0.6038
27	9.6665	0.9128	1.0347	1.2223	11	9.7668	0.9611	1.2660	0.5652
28	9.6698	0.9160	1.0449	1.2171	12	9.7671	0.9606	1.2673	0.5227
29	9.6723	0.9192	1.0548	1.2117	13	9.7678	0.9594	1.2684	0.4755
30	9.6741	0.9219	1.0643	1.2061	14	9.7690	0.9578	1.2694	0.4223
31	+9.6755	−0.9239	+1.0734	−1.2003	15	+9.7708	−0.9563	+1.2703	−0.3614
Aug. 1	9.6768	0.9249	1.0822	1.1943	16	9.7732	0.9553	1.2711	0.2904
2	9.6783	0.9250	1.0906	1.1881	17	9.7758	0.9549	1.2718	0.2055
3	9.6803	0.9243	1.0986	1.1816	18	9.7785	0.9554	1.2724	0.0993
4	9.6830	0.9234	1.1064	1.1749	19	9.7810	0.9567	1.2728	9.9582
$(21^h.0)$ 5	+9.6865	−0.9225	+1.1140	−1.1680	$(0^h.0)$ 20	+9.7830	−0.9586	+1.2731	−9.7473
6	9.6906	0.9222	1.1214	1.1609	21	9.7845	0.9606	1.2732	−9.3203
7	9.6950	0.9226	1.1287	1.1536	22	9.7855	0.9625	1.2731	+9.1443
8	9.6994	0.9239	1.1358	1.1460	23	9.7860	0.9639	1.2729	9.6891
9	9.7035	0.9262	1.1427	1.1382	24	9.7863	0.9645	1.2726	9.9237
10	+9.7070	−0.9291	+1.1493	−1.1301	25	+9.7866	−0.9641	+1.2722	+0.0751
11	9.7097	0.9320	1.1556	1.1217	26	9.7873	0.9630	1.2717	0.1871
12	9.7116	0.9350	1.1616	1.1129	27	9.7883	0.9613	1.2712	0.2760
13	9.7127	0.9375	1.1673	1.1038	28	9.7900	0.9593	1.2705	0.3496
14	9.7136	0.9391	1.1729	1.0944	29	9.7924	0.9575	1.2697	0.4125
15	+9.7143	−0.9398	+1.1784	−1.0847	30	+9.7951	−0.9562	+1.2687	+0.4674
16	+9.7152	−0.9396	+1.1837	−1.0746	Oct. 1	+9.7981	−0.9557	+1.2675	+0.5160

$E = -0''.01$

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.
Oct. 1	+9.7981	−0.9557	+1.2675	+0.5160	Nov. 16	+9.8775	−0.9337	+1.0302	+1.2246
2	9.8011	0.9560	1.2661	0.5596	17	9.8785	0.9340	1.0190	1.2299
3	9.8037	0.9571	1.2646	0.5991	18	9.8794	0.9334	1.0073	1.2350
4	9.8059	0.9587	1.2630	0.6352	19	9.8804	0.9319	0.9952	1.2399
$(1^{\mathrm{h}}.0)$ 5	9.8074	0.9604	1.2613	0.6685	$(4^{\mathrm{h}}.0)$ 20	9.8818	0.9297	0.9827	1.2445
6	+9.8084	−0.9617	+1.2595	+0.6993	21	+9.8836	−0.9269	+0.9698	+1.2489
7	9.8088	0.9624	1.2577	0.7279	22	9.8859	0.9241	0.9562	1.2531
8	9.8091	0.9623	1.2557	0.7545	23	9.8887	0.9217	0.9420	1.2572
9	9.8095	0.9613	1.2535	0.7797	24	9.8918	0.9201	0.9271	1.2612
10	9.8101	0.9595	1.2511	0.8034	25	9.8950	0.9193	0.9115	1.2650
11	+9.8111	−0.9572	+1.2485	+0.8257	26	+9.8981	−0.9196	+0.8952	+1.2687
12	9.8127	0.9548	1.2458	0.8467	27	9.9009	0.9206	0.8781	1.2722
13	9.8149	0.9527	1.2430	0.8666	28	9.9032	0.9220	0.8601	1.2755
14	9.8174	0.9513	1.2400	0.8856	29	9.9050	0.9235	0.8412	1.2786
15	9.8199	0.9507	1.2368	0.9037	30	9.9065	0.9245	0.8215	1.2816
16	+9.8225	−0.9510	+1.2335	+0.9210	Dec. 1	+9.9076	−0.9248	+0.8008	+1.2844
17	9.8247	0.9520	1.2301	0.9376	2	9.9086	0.9241	0.7787	1.2871
18	9.8264	0.9532	1.2265	0.9535	3	9.9098	0.9226	0.7552	1.2897
19	9.8277	0.9545	1.2227	0.9687	4	9.9112	0.9204	0.7303	1.2921
$(2^{\mathrm{h}}.0)$ 20	9.8285	0.9554	1.2188	0.9832	$(5^{\mathrm{h}}.0)$ 5	9.9130	0.9179	0.7037	1.2943
21	+9.8290	−0.9555	+1.2147	+0.9970	6	+9.9152	−0.9155	+0.6752	+1.2963
22	9.8296	0.9547	1.2104	1.0102	7	9.9178	0.9136	0.6445	1.2982
23	9.8303	0.9531	1.2059	1.0229	8	9.9206	0.9126	0.6114	1.3000
24	9.8315	0.9508	1.2012	1.0352	9	9.9234	0.9126	0.5754	1.3017
25	9.8332	0.9481	1.1964	1.0471	10	9.9260	0.9136	0.5359	1.3032
26	+9.8354	−0.9455	+1.1914	+1.0586	11	+9.9284	−0.9152	+0.4924	+1.3046
27	9.8381	0.9433	1.1862	1.0697	12	9.9303	0.9171	0.4438	1.3058
28	9.8412	0.9419	1.1808	1.0804	13	9.9319	0.9189	0.3889	1.3069
29	9.8442	0.9413	1.1752	1.0907	14	9.9331	0.9201	0.3259	1.3078
30	9.8471	0.9417	1.1694	1.1006	15	9.9342	0.9206	0.2520	1.3086
31	+9.8496	−0.9426	+1.1634	+1.1100	16	+9.9353	−0.9200	+0.1627	+1.3093
Nov. 1	9.8516	0.9438	1.1571	1.1190	17	9.9367	0.9187	0.0500	1.3098
2	9.8530	0.9448	1.1506	1.1277	18	9.9384	0.9168	9.8972	1.3102
3	9.8540	0.9453	1.1439	1.1362	19	9.9405	0.9147	9.6589	1.3104
$(3^{\mathrm{h}}.0)$ 4	9.8547	0.9450	1.1369	1.1445	$(6^{\mathrm{h}}.0)$ 20	9.9430	0.9129	+9.0914	1.3105
5	+9.8554	−0.9437	+1.1297	+1.1526	21	+9.9458	−0.9118	−9.3239	+1.3105
6	9.8563	0.9416	1.1222	1.1605	22	9.9488	0.9116	9.7360	1.3103
7	9.8576	0.9390	1.1144	1.1681	23	9.9518	0.9124	9.9434	1.3100
8	9.8594	0.9361	1.1063	1.1754	24	9.9545	0.9141	0.0821	1.3096
9	9.8616	0.9334	1.0979	1.1824	25	9.9569	0.9163	0.1885	1.3091
10	+9.8642	−0.9314	+1.0893	+1.1891	26	+9.9588	−0.9188	−0.2731	+1.3084
11	9.8670	0.9302	1.0804	1.1954	27	9.9603	0.9209	0.3439	1.3076
12	9.8697	0.9299	1.0711	1.2016	28	9.9614	0.9223	0.4045	1.3066
13	9.8723	0.9305	1.0614	1.2076	29	9.9624	0.9229	0.4577	1.3055
14	9.8744	0.9316	1.0514	1.2134	30	9.9635	0.9226	0.5049	1.3042
15	+9.8762	−0.9328	+1.0410	+1.2191	31	+9.9647	−0.9216	−0.5473	+1.3028
16	+9.8775	−0.9337	+1.0302	+1.2246	32	+9.9662	−0.9200	−0.5858	+1.3013

E = — 0.″01

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Jan.	0	0.0030	−8.23	−0.549	242 52	16 11.5	349 48	23 19.2	+0.8937	+1.3093	−1.57	−0.1945
	1	0.0057	7.95	0.530	243 41	16 14.7	348 51	23 15.4	0.8912	1.3091	1.71	0.2322
	2	0.0085	7.09	0.513	244 32	16 18.1	347 55	23 11.7	0.8897	1.3088	1.85	0.2668
	3	0.0112	7.44	0.496	245 22	16 21.5	346 59	23 7.9	0.8894	1.3085	1.99	0.2984
($7^{h}.0$)	4	0.0140	7.24	0.483	246 8	16 24.5	346 2	23 4.1	0.8901	1.3082	2.13	0.3280
	5	0.0167	−7.08	−0.472	246 46	16 27.1	345 5	23 0.3	+0.8913	+1.3079	−2.27	−0.3555
	6	0.0194	6.96	0.464	247 15	16 29.0	344 9	22 56.6	0.8927	1.3076	2.41	0.3814
	7	0.0222	6.87	0.458	247 36	16 30.4	343 12	22 52.8	0.8937	1.3072	2.55	0.4057
	8	0.0249	6.79	0.453	247 54	16 31.6	342 15	22 49.0	0.8939	1.3068	2.69	0.4284
	9	0.0277	6.71	0.447	248 9	16 32.6	341 18	22 45.2	0.8930	1.3064	2.82	0.4499
	10	0.0304	−6.60	−0.440	248 25	16 33.7	340 21	22 41.4	+0.8911	+1.3060	−2.95	−0.4702
	11	0.0331	6.46	0.431	248 47	16 35.1	339 24	22 37.6	0.8869	1.3056	3.09	0.4896
	12	0.0359	6.28	0.419	249 16	16 37.1	338 27	22 33.8	0.8803	1.3051	3.22	0.5080
	13	0.0386	6.07	0.405	249 53	16 39.7	337 29	22 29.9	0.8839	1.3047	3.35	0.5254
	14	0.0414	5.84	0.389	250 36	16 42.4	336 31	22 26.1	0.8822	1.3042	3.48	0.5422
	15	0.0441	−5.60	−0.373	251 24	16 45.6	335 33	22 22.2	+0.8815	+1.3037	−3.61	−0.5582
	16	0.0468	5.37	0.358	252 13	16 48.9	334 35	22 18.3	0.8819	1.3032	3.74	0.5735
	17	0.0496	5.16	0.344	252 59	16 51.9	333 37	22 14.5	0.8834	1.3027	3.87	0.5881
	18	0.0523	4.99	0.333	253 38	16 54.5	332 39	22 10.6	0.8855	1.3021	3.99	0.6020
($8^{h}.0$)	19	0.0551	4.86	0.324	254 11	16 56.7	331 41	22 6.7	0.8878	1.3016	4.12	0.6154
	20	0.0578	−4.76	−0.317	254 36	16 58.4	330 42	22 2.8	+0.8898	+1.3010	−4.24	−0.6282
	21	0.0605	4.67	0.311	254 56	16 59.7	329 43	21 58.9	0.8911	1.3004	4.37	0.6405
	22	0.0632	4.59	0.306	255 12	17 0.7	328 44	21 54.9	0.8915	1.2998	4.49	0.6524
	23	0.0660	4.49	0.299	255 31	17 2.1	327 45	21 51.0	0.8908	1.2992	4.61	0.6638
	24	0.0687	4.37	0.291	255 53	17 3.5	326 46	21 47.1	0.8894	1.2986	4.73	0.6748
	25	0.0714	−4.20	−0.280	256 22	17 5.5	325 47	21 43.1	+0.8875	+1.2980	−4.85	−0.6854
	26	0.0741	4.00	0.267	256 58	17 7.9	324 47	21 39.1	0.8856	1.2974	4.96	0.6957
	27	0.0769	3.77	0.251	257 42	17 10.8	323 48	21 35.2	0.8843	1.2967	5.08	0.7056
	28	0.0796	3.53	0.235	258 29	17 13.9	322 48	21 31.2	0.8838	1.2961	5.19	0.7151
	29	0.0824	3.29	0.219	259 18	17 17.2	321 48	21 27.2	0.8846	1.2954	5.30	0.7242
	30	0.0851	−3.07	−0.205	260 4	17 20.3	320 49	21 23.3	+0.8864	+1.2948	−5.41	−0.7330
	31	0.0878	2.88	0.192	260 44	17 22.9	319 49	21 19.3	0.8890	1.2941	5.51	0.7414
Feb.	1	0.0906	2.74	0.183	261 16	17 25.1	318 49	21 15.3	0.8920	1.2935	5.62	0.7495
	2	0.0933	2.64	0.176	261 38	17 26.5	317 48	21 11.3	0.8949	1.2928	5.72	0.7574
	3	0.0961	2.58	0.172	261 54	17 27.6	316 48	21 7.2	0.8973	1.2922	5.82	0.7651
($9^{h}.0$)	4	0.0988	−2.52	−0.168	262 06	17 28.4	315 47	21 3.1	+0.8988	+1.2915	−5.92	−0.7725
	5	0.1015	2.48	0.165	262 13	17 28.9	314 46	20 59.1	0.8992	1.2908	6.01	0.7797
	6	0.1043	2.42	0.161	262 25	17 29.7	313 45	20 55.0	0.8988	1.2902	6.11	0.7866
	7	0.1070	2.33	0.155	262 41	17 30.7	312 44	20 50.9	0.8977	1.2895	6.20	0.7932
	8	0.1098	2.20	0.147	263 4	17 32.3	311 42	20 46.8	0.8965	1.2889	6.29	0.7995
	9	0.1125	−2.04	−0.136	263 35	17 34.3	310 40	20 42.7	+0.8954	+1.2882	−6.39	−0.8056
	10	0.1152	1.85	0.123	264 11	17 36.7	309 38	20 38.5	0.8951	1.2876	6.48	0.8115
	11	0.1180	1.65	0.110	264 50	17 39.3	308 36	20 34.4	0.8958	1.2869	6.57	0.8172
	12	0.1207	1.45	0.097	265 28	17 41.9	307 34	20 30.3	0.8975	1.2863	6.65	0.8227
	13	0.1235	1.27	0.085	266 3	17 44.2	306 32	20 26.1	0.9000	1.2856	6.73	0.8280
	14	0.1262	−1.14	−0.076	266 31	17 46.1	305 29	20 21.9	+0.9031	+1.2850	−6.81	−0.8331
	15	0.1289	−1.03	−0.069	266 53	17 47.5	304 27	20 17.8	+0.9063	+1.2844	−6.89	−0.8380

FOR WASHINGTON MEAN MIDNIGHT

Solar Day. (Sid. Hour.)		τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*.	Log *i*.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	"	s	° ′	h m	° ′	h m			"	
Feb.	15	0.1289	−1.03	−0.069	266 53	17 47.5	304 27	20 17.8	+0.9063	+1.2844	−6.89	−0.8380
	16	0.1317	0.96	0.064	267 7	17 48.5	303 24	20 13.6	0.9092	1.2838	6.97	0.8427
	17	0.1344	0.91	0.061	267 17	17 49.1	302 21	20 9.4	0.9112	1.2832	7.04	0.8472
	18	0.1372	0.87	0.058	267 25	17 49.7	301 18	20 5.2	0.9128	1.2826	7.11	0.8516
(10ʰ.0)	19	0.1399	0.81	0.054	267 35	17 50.3	300 15	20 1.0	0.9124	1.2820	7.18	0.8558
	20	0.1426	−0.73	−0.049	267 49	17 51.3	299 12	19 56.8	+0.9117	+1.2814	−7.24	−0.8598
	21	0.1454	0.62	0.041	268 9	17 52.6	298 9	19 52.6	0.9105	1.2809	7.30	0.8637
	22	0.1481	0.47	0.031	268 37	17 54.5	297 6	19 48.4	0.9094	1.2803	7.36	0.8674
	23	0.1509	0.29	0.019	269 11	17 56.7	296 2	19 44.1	0.9087	1.2798	7.42	0.8709
	24	0.1536	−0.08	−0.005	269 48	17 59.2	294 58	19 39.9	0.9089	1.2793	7.48	0.8742
	25	0.1563	+0.12	+0.008	270 27	18 1.8	293 54	19 35.6	+0.9101	+1.2788	−7.53	−0.8774
	26	0.1591	0.31	0.021	271 0	18 4.0	292 50	19 31.3	0.9122	1.2784	7.58	0.8805
	27	0.1618	0.48	0.032	271 30	18 6.0	291 46	19 27.1	0.9150	1.2779	7.63	0.8834
	28	0.1646	0.60	0.040	271 52	18 7.5	290 42	19 22.8	0.9180	1.2775	7.68	0.8861
Mar.	1	0.1673	0.68	0.045	272 5	18 8.3	289 38	19 18.5	0.9209	1.2771	7.73	0.8886
	2	0.1700	+0.72	+0.048	272 12	18 8.8	288 34	19 14.3	+0.9232	+1.2767	−7.77	−0.8910
	3	0.1728	0.74	0.049	272 15	18 9.0	287 29	19 9.9	0.9246	1.2763	7.81	0.8932
	4	0.1755	0.75	0.050	272 17	18 9.1	286 24	19 5.6	0.9250	1.2759	7.85	0.8953
	5	0.1783	0.77	0.051	272 21	18 9.4	285 19	19 1.3	0.9246	1.2755	7.89	0.8973
(11ʰ.0)	6	0.1810	0.82	0.054	272 30	18 10.0	284 14	18 56.9	0.9235	1.2752	7.93	0.8992
	7	0.1837	+0.91	+0.061	272 46	18 11.1	283 10	18 52.6	+0.9221	+1.2749	−7.96	−0.9009
	8	0.1864	1.03	0.069	273 9	18 12.6	282 5	18 48.3	0.9210	1.2747	7.99	0.9024
	9	0.1892	1.19	0.079	273 37	18 14.5	281 0	18 44.0	0.9205	1.2744	8.02	0.9038
	10	0.1919	1.36	0.091	274 8	18 16.5	279 55	18 39.7	0.9208	1.2742	8.04	0.9051
	11	0.1946	1.53	0.102	274 37	18 18.5	278 50	18 35.3	0.9221	1.2739	8.06	0.9063
	12	0.1973	+1.69	+0.113	275 5	18 20.3	277 45	18 31.0	+0.9242	+1.2737	−8.08	−0.9072
	13	0.2000	1.82	0.121	275 26	18 21.7	276 40	18 26.7	0.9269	1.2736	8.09	0.9081
	14	0.2028	1.91	0.127	275 40	18 22.7	275 35	18 22.3	0.9295	1.2735	8.11	0.9088
	15	0.2056	1.97	0.131	275 49	18 23.3	274 30	18 18.0	0.9318	1.2734	8.12	0.9094
	16	0.2083	2.00	0.133	275 53	18 23.5	273 25	18 13.7	0.9334	1.2733	8.13	0.9099
	17	0.2110	+2.02	+0.135	275 56	18 23.7	272 20	18 9.3	+0.9340	+1.2733	−8.13	−0.9102
	18	0.2138	2.04	0.136	276 1	18 24.1	271 15	18 5.0	0.9338	1.2733	8.14	0.9104
	19	0.2165	2.10	0.140	276 10	18 24.7	270 10	18 0.7	0.9327	1.2732	8.14	0.9105
	20	0.2193	2.18	0.145	276 27	18 25.8	269 5	17 56.3	0.9312	1.2732	8.14	0.9105
(12ʰ.0)	21	0.2220	2.30	0.153	276 50	18 27.3	268 0	17 52.0	0.9296	1.2732	8.14	0.9104
	22	0.2247	+2.46	+0.164	277 19	18 29.3	266 55	17 47.7	+0.9285	+1.2733	−8.13	−0.9102
	23	0.2275	2.65	0.177	277 53	18 31.5	265 50	17 43.3	0.9281	1.2734	8.12	0.9098
	24	0.2302	2.85	0.190	278 27	18 33.8	264 45	17 39.0	0.9286	1.2735	8.11	0.9092
	25	0.2330	3.03	0.202	278 59	18 35.9	263 41	17 34.7	0.9302	1.2736	8.10	0.9085
	26	0.2357	3.20	0.213	279 25	18 37.7	262 37	17 30.5	0.9322	1.2737	8.08	0.9076
	27	0.2384	+3.32	+0.221	279 44	18 38.9	261 32	17 26.1	+0.9346	+1.2739	−8.06	−0.9066
	28	0.2412	3.41	0.227	279 56	18 39.7	260 28	17 21.9	0.9369	1.2741	8.04	0.9055
	29	0.2439	3.46	0.231	280 2	18 40.1	259 24	17 17.6	0.9385	1.2743	8.02	0.9043
	30	0.2467	3.48	0.232	280 5	18 40.3	258 20	17 13.3	0.9394	1.2745	8.00	0.9030
	31	0.2494	3.49	0.233	280 6	18 40.4	257 16	17 9.1	0.9392	1.2748	7.97	0.9016
Apr.	1	0.2521	+3.50	+0.233	280 11	18 40.7	256 12	17 4.8	+0.9382	+1.2751	−7.94	−0.9001
	2	0.2549	+3.54	+0.236	280 20	18 41.3	255 8	17 0.5	+0.9366	+1.2754	−7.91	−0.8984

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
Apr. 1	0.2521	+3.50	+0.233	280 11	18 40.7	256 12	17 4.8	+0.9382	+1.2751	−7.94	−0.9001
2	0.2549	3.54	0.236	280 20	18 41.3	255 8	17 0.5	0.9366	1.2754	7.91	0.8984
3	0.2576	3.62	0.241	280 36	18 42.4	254 4	16 56.3	0.9346	1.2757	7.88	0.8965
4	0.2604	3.73	0.249	280 59	18 43.9	253 1	16 52.1	0.9328	1.2761	7.84	0.8944
(13^{h}.0) 5	0.2631	3.88	0.259	281 27	18 45.8	251 58	16 47.9	0.9317	1.2765	7.80	0.8922
6	0.2658	+4.05	+0.270	281 58	18 47.9	250 54	16 43.6	+0.9314	+1.2769	−7.76	−0.8898
7	0.2686	4.23	0.282	282 29	18 49.9	249 51	16 39.4	0.9322	1.2773	7.72	0.8873
8	0.2713	4.40	0.293	282 57	18 51.8	248 48	16 35.2	0.9337	1.2777	7.67	0.8847
9	0.2741	4.55	0.303	283 19	18 53.3	247 45	16 31.0	0.9357	1.2781	7.62	0.8820
10	0.2768	4.67	0.311	283 35	18 54.3	246 42	16 26.8	0.9378	1.2786	7.57	0.8792
11	0.2795	+4.74	+0.316	283 46	18 55.1	245 40	16 22.7	+0.9396	+1.2791	−7.52	−0.8763
12	0.2823	4.79	0.319	283 52	18 55.5	244 38	16 18.5	0.9408	1.2796	7.47	0.8732
13	0.2850	4.82	0.321	283 58	18 55.9	243 36	16 14.4	0.9410	1.2801	7.41	0.8699
14	0.2878	4.86	0.324	284 6	18 56.4	242 34	16 10.3	0.9404	1.2806	7.35	0.8664
15	0.2905	4.91	0.327	284 18	18 57.2	241 32	16 6.1	0.9390	1.2811	7.29	0.8627
16	0.2932	+5.01	+0.334	284 37	18 58.5	240 31	16 2.1	+0.9372	+1.2816	−7.23	−0.8590
17	0.2960	5.12	0.341	285 4	19 0.3	239 30	15 58.0	0.9354	1.2821	7.17	0.8551
18	0.2987	5.29	0.353	285 37	19 2.5	238 29	15 53.9	0.9340	1.2827	7.10	0.8510
19	0.3015	5.50	0.367	286 14	19 4.9	237 28	15 49.9	0.9334	1.2833	7.03	0.8468
20	0.3042	5.71	0.381	286 53	19 7.5	236 27	15 45.8	0.9338	1.2839	6.96	0.8424
(14^{h}.0) 21	0.3069	+5.93	+0.395	287 29	19 9.9	235 27	15 41.8	+0.9350	+1.2845	−6.89	−0.8378
22	0.3097	6.12	0.408	287 59	19 11.9	234 27	15 37.8	0.9370	1.2851	6.81	0.8330
23	0.3124	6.28	0.419	288 23	19 13.5	233 26	15 33.7	0.9392	1.2857	6.73	0.8281
24	0.3152	6.40	0.427	288 40	19 14.7	232 26	15 29.7	0.9413	1.2863	6.65	0.8230
25	0.3179	6.49	0.433	288 51	19 15.4	231 26	15 25.7	0.9428	1.2869	6.57	0.8177
26	0.3206	+6.54	+0.436	268 58	19 15.9	230 27	15 21.7	+0.9436	+1.2875	−6.49	−0.8122
27	0.3233	6.58	0.439	289 5	19 16.3	229 28	15 17.8	0.9436	1.2882	6.40	0.8065
28	0.3261	6.62	0.441	289 16	19 17.1	228 29	15 13.9	0.9425	1.2888	6.31	0.8006
29	0.3288	6.68	0.445	289 30	19 18.0	227 30	15 10.0	0.9410	1.2895	6.22	0.7946
30	0.3315	6.77	0.451	289 52	19 19.5	226 31	15 6.1	0.9392	1.2901	6.13	0.7883
May 1	0.3342	+6.90	+0.460	290 21	19 21.4	225 32	15 2.1	+0.9376	+1.2907	−6.04	−0.7819
2	0.3370	7.07	0.471	290 55	19 23.7	224 33	14 58.2	0.9366	1.2913	5.95	0.7752
3	0.3397	7.26	0.484	291 31	19 26.1	223 35	14 54.3	0.9365	1.2920	5.86	0.7682
4	0.3425	7.47	0.498	292 7	19 28.5	222 37	14 50.5	0.9374	1.2926	5.77	0.7609
5	0.3452	7.68	0.512	292 40	19 30.7	221 39	14 46.6	0.9392	1.2932	5.67	0.7534
(15^{h}.0) 6	0.3479	+7.87	+0.525	293 8	19 32.5	220 41	14 42.7	+0.9415	+1.2939	−5.57	−0.7457
7	0.3507	8.02	0.535	293 27	19 33.8	219 43	14 38.9	0.9440	1.2945	5.47	0.7377
8	0.3534	8.14	0.543	293 42	19 34.8	218 46	14 35.1	0.9461	1.2951	5.36	0.7294
9	0.3562	8.23	0.549	293 54	19 35.6	217 49	14 31.3	0.9476	1.2957	5.25	0.7209
10	0.3589	8.30	0.553	294 4	19 36.3	216 52	14 27.5	0.9484	1.2963	5.15	0.7121
11	0.3616	+8.37	+0.558	294 17	19 37.1	215 56	14 23.7	+0.9483	+1.2969	−5.05	−0.7030
12	0.3644	8.45	0.563	294 34	19 38.3	215 0	14 20.0	0.9476	1.2975	4.94	0.6936
13	0.3671	8.56	0.571	294 59	19 39.9	214 4	14 16.3	0.9465	1.2981	4.83	0.6839
14	0.3699	8.71	0.581	295 30	19 42.0	213 8	14 12.5	0.9454	1.2986	4.72	0.6738
15	0.3726	8.89	0.593	296 6	19 44.4	212 12	14 8.8	0.9447	1.2992	4.61	0.6633
16	0.3753	+9.12	+0.608	296 49	19 47.3	211 16	14 5.1	+0.9450	+1.2998	−4.50	−0.6525
17	0.3781	+9.37	+0.625	297 31	19 50.1	210 20	14 1.3	+0.9463	+1.3003	−4.39	−0.6412

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
May 17	0.3781	+ 9.37	+0.625	297 31	19 50.1	210 20	14 1.3	+0.9463	+1.3003	−4.39	−0.6412
18	0.3808	9.62	0.641	298 10	19 52.7	209 25	13 57.7	0.9485	1.3009	4.27	0.6295
19	0.3836	9.86	0.657	298 44	19 54.9	208 30	13 54.0	0.9512	1.3014	4.15	0.6175
20	0.3863	10.07	0.671	299 11	19 56.7	207 35	13 50.3	0.9543	1.3020	4.03	0.6051
($16^{h}.0$) 21	0.3890	10.24	0.683	299 30	19 58.0	206 40	13 46.7	0.9572	1.3025	3.91	0.5920
22	0.3918	+10.37	+0.691	299 44	19 58.9	205 45	13 43.0	+0.9597	+1.3030	−3.79	−0.5783
23	0.3945	10.46	0.697	299 54	19 59.6	204 50	13 39.3	0.9614	1.3035	3.67	0.5641
24	0.3973	10.53	0.702	300 5	20 0.3	203 55	13 35.7	0.9621	1.3040	3.55	0.5494
25	0.4000	10.61	0.707	300 18	20 1.2	203 1	13 32.1	0.9621	1.3044	3.42	0.5342
26	0.4027	10.70	0.713	300 37	20 2.5	202 6	13 28.4	0.9617	1.3049	3.29	0.5185
27	0.4055	+10.80	+0.720	301 1	20 4.1	201 12	13 24.8	+0.9610	+1.3053	−3.17	−0.5019
28	0.4082	10.95	0.730	301 32	20 6.1	200 18	13 21.2	0.9606	1.3057	3.04	0.4843
29	0.4110	11.15	0.743	302 7	20 8.5	199 24	13 17.6	0.9607	1.3061	2.92	0.4656
30	0.4137	11.37	0.758	302 44	20 10.9	198 30	13 14.0	0.9618	1.3065	2.79	0.4459
31	0.4164	11.60	0.773	303 20	20 13.3	197 36	13 10.4	0.9639	1.3069	2.67	0.4252
June 1	0.4192	+11.84	+0.789	303 51	20 15.4	196 43	13 6.9	+0.9667	+1.3072	−2.54	−0.4039
2	0.4219	12.06	0.804	304 17	20 17.1	195 50	13 3.3	0.9700	1.3076	2.41	0.3811
3	0.4247	12.25	0.817	304 36	20 18.4	194 57	12 59.8	0.9734	1.3079	2.28	0.3571
4	0.4274	12.42	0.828	304 50	20 19.3	194 4	12 56.3	0.9765	1.3082	2.15	0.3313
($17^{h}.0$) 5	0.4301	12.54	0.836	305 0	20 20.0	193 11	12 52.7	0.9790	1.3085	2.02	0.3037
6	0.4329	+12.65	+0.843	305 10	20 20.7	192 18	12 49.2	+0.9809	+1.3088	−1.88	−0.2743
7	0.4356	12.74	0.849	305 21	20 21.4	191 25	12 45.7	0.9819	1.3090	1.75	0.2428
8	0.4384	12.83	0.855	305 38	20 22.5	190 32	12 42.1	0.9824	1.3092	1.62	0.2083
9	0.4411	12.96	0.864	306 0	20 24.0	189 39	12 38.6	0.9827	1.3094	1.48	0.1709
10	0.4438	13.12	0.875	306 28	20 25.9	188 46	12 35.1	0.9830	1.3096	1.35	0.1297
11	0.4465	+13.32	+0.888	307 2	20 28.1	187 53	12 31.5	+0.9838	+1.3098	−1.21	−0.0843
12	0.4493	13.55	0.903	307 39	20 30.6	187 0	12 28.0	0.9854	1.3099	1.08	0.0334
13	0.4520	13.82	0.921	308 15	20 33.0	186 7	12 24.5	0.9879	1.3101	0.94	9.9762
14	0.4547	14.09	0.939	308 48	20 35.2	185 15	12 21.0	0.9910	1.3102	0.81	9.9093
15	0.4574	14.35	0.957	309 16	20 37.1	184 22	12 17.5	0.9947	1.3103	0.67	9.8302
16	0.4602	+14.59	+0.973	309 37	20 38.5	183 30	12 14.0	+0.9987	+1.3104	−0.54	−9.7331
17	0.4629	14.79	0.986	309 51	20 39.4	182 37	12 10.5	1.0025	1.3105	0.40	9.6079
18	0.4657	14.95	0.997	310 1	20 40.1	181 45	12 7.0	1.0058	1.3105	0.27	9.4323
19	0.4684	15.11	1.007	310 7	20 40.5	180 52	12 3.5	1.0084	1.3106	−0.13	−9.1303
($18^{h}.0$) 20	0.4711	15.18	1.012	310 14	20 40.9	180 0	12 0.0	1.0104	1.3106	0.00	+6.0990
21	0.4739	+15.27	+1.018	310 23	20 41.5	179 7	11 56.5	+1.0114	+1.3105	+0.14	+9.1335
22	0.4766	15.35	1.023	310 36	20 42.4	178 15	11 53.0	1.0120	1.3105	0.27	9.4338
23	0.4794	15.47	1.031	310 55	20 43.7	177 22	11 49.5	1.0126	1.3104	0.41	9.6094
24	0.4821	15.62	1.041	311 18	20 45.2	176 30	11 46.0	1.0132	1.3104	0.54	9.7441
25	0.4848	15.80	1.053	311 46	20 47.1	175 37	11 42.5	1.0144	1.3103	0.67	9.8305
26	0.4876	+16.02	+1.067	312 14	20 48.9	174 45	11 39.0	+1.0164	+1.3102	+0.81	+9.9093
27	0.4903	16.27	1.085	312 41	20 50.7	173 52	11 35.5	1.0192	1.3101	0.94	9.9763
28	0.4931	16.51	1.101	313 4	20 52.3	173 0	11 32.0	1.0226	1.3100	1.08	0.0334
29	0.4958	16.75	1.117	313 22	20 53.5	172 7	11 28.5	1.0263	1.3098	1.21	0.0841
30	0.4985	16.95	1.130	313 33	20 54.2	171 15	11 25.0	1.0301	1.3096	1.34	0.1295
July 1	0.5013	+17.13	+1.142	313 40	20 54.7	170 22	11 21.5	+1.0337	+1.3094	+1.48	+0.1705
2	0.5040	+17.27	+1.151	313 43	20 54.9	169 29	11 17.9	+1.0367	+1.3092	+1.61	+0.2080

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
July 1	0.5013	+17.13	+1.142	313 40	20 54.7	170 22	11 21.5	+1.0337	+1.3094	+1.48	+0.1705
2	0.5040	17.27	1.151	313 43	20 54.9	169 29	11 17.9	1.0367	1.3092	1.61	0.2080
3	0.5068	17.38	1.159	313 46	20 55.1	168 36	11 14.4	1.0392	1.3090	1.75	0.2423
4	0.5095	17.48	1.165	313 50	20 55.3	167 43	11 10.9	1.0409	1.3087	1.88	0.2728
5	0.5122	17.57	1.171	313 58	20 55.9	166 50	11 7.3	1.0421	1.3084	2.01	0.3032
$(19^{h}.0)$ 6	0.5150	+17.68	+1.179	314 11	20 56.7	165 57	11 3.8	+1.0431	+1.3081	+2.14	+0.3306
7	0.5177	17.82	1.188	314 30	20 58.0	165 4	11 0.3	1.0442	1.3078	2.27	0.3564
8	0.5205	18.00	1.200	314 53	20 59.5	164 11	10 56.7	1.0456	1.3075	2.40	0.3806
9	0.5232	18.23	1.215	315 19	21 1.3	163 18	10 53.2	1.0476	1.3072	2.53	0.4034
10	0.5259	18.47	1.231	315 45	21 3.0	162 24	10 49.6	1.0503	1.3069	2.66	0.4248
11	0.5287	+18.74	+1.249	316 8	21 4.5	161 31	10 46.1	+1.0537	+1.3065	+2.79	+0.4451
12	0.5314	19.00	1.267	316 26	21 5.7	160 37	10 42.5	1.0575	1.3061	2.92	0.4645
13	0.5342	19.24	1.283	316 38	21 6.5	159 43	10 38.9	1.0615	1.3057	3.05	0.4828
14	0.5369	19.44	1.296	316 45	21 7.0	158 49	10 35.3	1.0653	1.3053	3.17	0.5005
15	0.5396	19.61	1.307	316 47	21 7.1	157 55	10 31.7	1.0687	1.3049	3.30	0.5172
16	0.5424	+19.73	+1.315	316 46	21 7.1	157 1	10 28.1	+1.0715	+1.3044	+3.42	+0.5331
17	0.5451	19.83	1.322	316 46	21 7.1	156 7	10 24.5	1.0735	1.3040	3.54	0.5483
18	0.5479	19.89	1.326	316 47	21 7.1	155 13	10 20.9	1.0749	1.3035	3.66	0.5630
19	0.5506	19.96	1.331	316 52	21 7.4	154 18	10 17.2	1.0758	1.3031	3.78	0.5772
20	0.5533	20.05	1.337	317 3	21 8.2	153 24	10 13.6	1.0766	1.3026	3.90	0.5910
$(20^{h}.0)$ 21	0.5561	+20.17	+1.345	317 17	21 9.1	152 29	10 9.9	+1.0776	+1.3021	+4.02	+0.6042
22	0.5588	20.33	1.355	317 34	21 10.3	151 35	10 6.3	1.0789	1.3016	4.14	0.6168
23	0.5616	20.52	1.368	317 53	21 11.5	150 40	10 2.7	1.0808	1.3010	4.26	0.6288
24	0.5643	20.74	1.383	318 11	21 12.7	149 45	9 59.0	1.0832	1.3004	4.37	0.6401
25	0.5670	20.96	1.397	318 26	21 13.7	148 50	9 55.3	1.0863	1.2999	4.48	0.6511
26	0.5698	+21.17	+1.411	318 36	21 14.4	147 54	9 51.6	+1.0897	+1.2993	+4.59	+0.6618
27	0.5725	21.37	1.425	318 41	21 14.7	146 59	9 47.9	1.0931	1.2988	4.70	0.6723
28	0.5753	21.54	1.436	318 41	21 14.7	146 3	9 44.2	1.0963	1.2982	4.81	0.6825
29	0.5780	21.67	1.445	318 38	21 14.5	145 8	9 40.5	1.0991	1.2976	4.92	0.6924
30	0.5807	21.75	1.450	318 35	21 14.3	144 12	9 36.8	1.1013	1.2970	5.03	0.7019
31	0.5834	+21.82	+1.455	318 32	21 14.1	143 16	9 33.1	+1.1030	+1.2964	+5.14	+0.7110
Aug. 1	0.5862	21.89	1.459	318 33	21 14.2	142 19	9 29.3	1.1042	1.2958	5.24	0.7197
2	0.5889	21.96	1.464	318 39	21 14.6	141 23	9 25.5	1.1050	1.2952	5.35	0.7281
3	0.5916	22.06	1.471	318 50	21 15.3	140 26	9 21.7	1.1058	1.2946	5.45	0.7361
4	0.5943	22.20	1.480	319 4	21 16.3	139 29	9 17.9	1.1070	1.2940	5.55	0.7439
$(21^{h}.0)$ 5	0.5971	+22.39	+1.493	319 21	21 17.4	138 32	9 14.1	+1.1086	+1.2934	+5.65	+0.7515
6	0.5998	22.59	1.506	319 38	21 18.5	137 35	9 10.3	1.1109	1.2927	5.74	0.7589
7	0.6026	22.82	1.521	319 54	21 19.6	136 37	9 6.5	1.1136	1.2921	5.84	0.7662
8	0.6053	23.06	1.537	320 6	21 20.4	135 40	9 2.7	1.1167	1.2915	5.93	0.7733
9	0.6080	23.28	1.552	320 13	21 20.9	134 42	8 58.8	1.1201	1.2908	6.02	0.7801
10	0.6108	+23.46	+1.564	320 15	21 21.0	133 44	8 54.9	+1.1234	+1.2902	+6.11	+0.7866
11	0.6135	23.61	1.574	320 14	21 20.9	132 46	8 51.1	1.1262	1.2895	6.20	0.7929
12	0.6163	23.71	1.581	320 10	21 20.7	131 48	8 47.2	1.1285	1.2889	6.29	0.7990
13	0.6190	23.78	1.585	320 5	21 20.3	130 49	8 43.3	1.1301	1.2883	6.38	0.8048
14	0.6217	23.82	1.589	320 2	21 20.1	129 50	8 39.3	1.1313	1.2877	6.46	0.8104
15	0.6245	+23.86	+1.592	320 2	21 20.1	128 51	8 35.4	+1.1320	+1.2871	+6.54	+0.8159
16	0.6272	+23.91	+1.594	320 6	21 20.4	127 52	8 31.5	+1.1325	+1.2865	+6.62	+0.8212

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	"	s	° ′	h m	° ′	h m			"	
Aug. 16	0.6272	+23.91	+1.594	320 6	21 20.4	127 52	8 31.5	+1.1325	+1.2865	+6.62	+0.8212
17	0.6300	23.99	1.599	320 15	21 21.0	126 53	8 27.5	1.1330	1.2859	6.70	0.8263
18	0.6327	24.10	1.607	320 26	21 21.7	125 54	8 23.6	1.1338	1.2853	6.78	0.8312
19	0.6354	24.24	1.616	320 40	21 22.7	124 54	8 19.6	1.1350	1.2847	6.86	0.8360
(22^{h}.0) 20	0.6382	24.42	1.628	320 53	21 23.5	123 55	8 15.7	1.1368	1.2841	6.94	0.8406
21	0.6409	+24.61	+1.641	321 4	21 24.3	122 55	8 11.7	+1.1390	+1.2836	+7.01	+0.8450
22	0.6437	24.79	1.653	321 11	21 24.7	121 54	8 7.6	1.1416	1.2830	7.08	0.8493
23	0.6464	24.97	1.665	321 13	21 24.9	120 54	8 3.6	1.1444	1.2824	7.15	0.8534
24	0.6491	25.11	1.674	321 12	21 24.8	119 53	7 59.5	1.1469	1.2819	7.21	0.8573
25	0.6519	25.22	1.681	321 8	21 24.5	118 52	7 55.5	1.1491	1.2813	7.27	0.8611
26	0.6546	+25.27	+1.685	321 2	21 24.1	117 51	7 51.4	+1.1508	+1.2808	+7.33	+0.8647
27	0.6574	25.32	1.688	320 57	21 23.8	116 50	7 47.4	1.1519	1.2802	7.39	0.8682
28	0.6601	25 35	1.690	320 55	21 23.7	115 49	7 43.3	1.1527	1.2797	7.45	0.8716
29	0.6628	25.39	1.693	320 58	21 23.9	114 48	7 39.2	1.1531	1.2792	7.50	0.8748
30	0.6656	25.45	1.697	321 4	21 24.3	113 46	7 35.1	1.1535	1.2787	7.55	0.8778
31	0.6683	+25.54	+1.703	321 14	21 24.9	112 44	7 30.9	+1.1541	+1.2783	+7.60	+0.8807
Sept. 1	0.6711	25.66	1.711	321 27	21 25.8	111 42	7 26.8	1.1549	1.2779	7.64	0.8835
2	0.6738	25.85	1.723	321 42	21 26.8	110 40	7 22.7	1.1564	1.2775	7.69	0.8861
3	0.6765	26.04	1.736	321 56	21 27.7	109 38	7 18.5	1.1584	1.2771	7.73	0.8885
(23^{h}.0) 4	0.6793	26.25	1.750	322 7	21 28.5	108 36	7 14.4	1.1607	1.2767	7.77	0.8908
5	0.6820	+26.45	+1.763	322 14	21 28.9	107 33	7 10.2	+1.1632	+1.2763	+7.81	+0.8930
6	0.6848	26.62	1.775	322 16	21 29.1	106 30	7 6.0	1.1658	1.2759	7.85	0.8951
7	0.6875	26.74	1.783	322 15	21 29.0	105 27	7 1.8	1.1680	1.2756	7.89	0.8971
8	0.6902	26.84	1.789	322 11	21 28.7	104 24	6 57.6	1.1699	1.2753	7.92	0.8990
9	0.6930	26.88	1.792	322 6	21 28.4	103 21	6 53.4	1.1711	1.2750	7.95	0.9007
10	0.6957	+26.92	+1.795	322 3	21 28.2	102 18	6 49.2	+1.1718	+1.2747	+7.98	+0.9022
11	0.6985	26.94	1.796	322 3	21 28.2	101 15	6 45.0	1.1722	1.2744	8.01	0.9036
12	0.7012	26.95	1.797	322 6	21 28.4	100 12	6 40.8	1.1722	1.2742	8.03	0.9048
13	0.7039	27.00	1.800	322 13	21 28.9	99 9	6 36.6	1.1722	1.2740	8.05	0.9059
14	0.7067	27.07	1.805	322 24	21 29.6	98 5	6 32.3	1.1723	1.2738	8.07	0.9069
15	0.7094	+27.18	+1.812	322 36	21 30.4	97 1	6 28.1	+1.1729	+1.2737	+8.09	+0.9078
16	0.7122	27.33	1.822	322 49	21 31.3	95 57	6 23.8	1.1741	1.2735	8.11	0.9086
17	0.7149	27.50	1.833	323 1	21 32.1	94 53	6 19.5	1.1756	1.2734	8.12	0.9093
18	0.7176	27.67	1.845	323 9	21 32.6	93 49	6 15.3	1.1775	1.2733	8.12	0.9098
19	0.7203	27.83	1.855	323 14	21 32.9	92 46	6 11.1	1.1795	1.2732	8.13	0.9102
(0^{h}.0) 20	0.7231	+27.96	+1.864	323 14	21 32.9	91 42	6 6.8	+1.1815	+1.2732	+8.13	+0.9104
21	0.7258	28.05	1.870	323 12	21 32.8	90 38	6 2.5	1.1832	1.2731	8.14	0.9105
22	0.7285	28.12	1.875	323 9	21 32.6	89 34	5 58.3	1.1845	1.2731	8.14	0.9105
23	0.7312	28.15	1.877	323 5	21 32.3	88 30	5 54.0	1.1854	1.2731	8 14	0.9104
24	0.7340	28.17	1.878	323 4	21 32.3	87 26	5 49.7	1.1858	1.2732	8.13	0.9103
25	0.7367	+28.18	+1.879	323 7	21 32.5	86 22	5 45.5	+1.1858	+1.2732	+8.13	+0.9100
26	0.7395	28.23	1.882	323 14	21 32.9	85 18	5 41.2	1.1858	1.2733	8.12	0.9095
27	0.7422	28.29	1.886	323 24	21 33.6	84 13	5 36.9	1.1859	1.2734	8.11	0.9088
28	0.7449	28.42	1.895	323 38	21 34.5	83 9	5 32.6	1.1863	1.2736	8.09	0.9080
29	0.7477	28.57	1.905	323 54	21 35.6	82 5	5 28.3	1.1872	1.2738	8.07	0.9071
30	0.7504	+28.75	+1.917	324 9	21 36.6	81 1	5 24.1	+1.1885	+1.2740	+8.05	+0.9061
Oct. 1	0.7532	+28.95	+1.930	324 22	21 37.5	79 57	5 19.8	+1.1903	+1.2742	+8.03	+0.9050

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	"	s	° ′	h m	° ′	h m			"	
Oct.	1	0.7532	+28.95	+1.930	324 22	21 37.5	79 57	5 19.8	+1.1903	+1.2742	+8.03	+0.9050
	2	0.7559	29.15	1.943	324 32	21 38.1	78 53	5 15.5	1.1924	1.2744	8.01	0.9038
	3	0.7586	29.32	1.955	324 38	21 38.5	77 49	5 11.3	1.1945	1.2747	7.98	0.9024
h	4	0.7614	29.46	1.964	324 40	21 38.7	76 45	5 7.0	1.1965	1.2750	7.95	0.9008
(1.●)	5	0.7641	29.57	1.971	324 39	21 38.6	75 41	5 2.7	1.1981	1.2753	7.92	0.8991
	6	0.7669	+29.64	+1.976	324 38	21 38.5	74 37	4 58.5	+1.1992	+1.2756	+7.89	+0.8972
	7	0.7696	29.67	1.978	324 37	21 38.5	73 33	4 54.2	1.1997	1.2759	7.85	0.8951
	8	0.7723	29.69	1.979	324 39	21 38.6	72 29	4 49.9	1.1999	1.2763	7.81	0.8929
	9	0.7751	29.72	1.981	324 44	21 38.9	71 26	4 45.7	1.1998	1.2767	7.77	0.8906
	10	0.7778	29.76	1.985	324 53	21 39.5	70 22	4 41.5	1.1996	1.2771	7.73	0.8882
	11	0.7806	+29.83	+1.989	325 5	21 40.3	69 18	4 37.2	+1.1995	+1.2775	+7.69	+0.8858
	12	0.7833	29.93	1.995	325 20	21 41.3	68 15	4 33.0	1.1996	1.2779	7.64	0.8833
	13	0.7860	30.08	2.005	325 36	21 42.4	67 11	4 28.7	1.2006	1.2783	7.59	0.8806
	14	0.7888	30.26	2.017	325 50	21 43.3	66 8	4 24.5	1.2019	1.2788	7.54	0.8777
	15	0.7915	30.44	2.029	326 2	21 44.1	65 5	4 20.3	1.2034	1.2793	7.49	0.8746
	16	0.7943	+30.62	+2.041	326 10	21 44.7	64 2	4 16.1	+1.2053	+1.2798	+7.43	+0.8713
	17	0.7970	30.77	2.051	326 14	21 44.9	62 59	4 11.9	1.2071	1.2803	7.37	0.8677
	18	0.7997	30.89	2.059	326 16	21 45.1	61 56	4 7.7	1.2087	1.2809	7.31	0.8640
h	19	0.8025	30.98	2.065	326 16	21 45.1	60 54	4 3.6	1.2100	1.2814	7.25	0.8602
(2.●)	20	0.8052	31.05	2.070	326 16	21 45.1	59 51	3 59.4	1.2108	1.2820	7.19	0.8563
	21	0.8080	+31.08	+2.072	326 17	21 45.2	58 49	3 55.3	+1.2112	+1.2825	+7.12	+0.8523
	22	0.8107	31.12	2.075	326 22	21 45.5	57 46	3 51.1	1.2114	1.2831	7.05	0.8481
	23	0 8134	31.17	2.078	326 31	21 46.1	56 44	3 46.9	1.2113	1.2837	6.98	0.8437
	24	0.8162	31.26	2.084	326 43	21 46.9	55 42	3 42.8	1.2115	1.2843	6.91	0.8391
	25	0.8189	31.38	2.092	326 59	21 47.9	54 40	3 38.7	1.2119	1.2849	6.83	0.8343
	26	0.8217	+31.54	+2.103	327 17	21 49.1	53 38	3 34.5	+1.2126	+1.2855	+6.75	+0.8292
	27	0.8244	31.74	2.116	327 34	21 50.3	52 37	3 30.5	1.2139	1.2862	6.67	0.8239
	28	0.8271	31.97	2.131	327 50	21 51.3	51 35	3 26.3	1.2158	1.2868	6.59	0.8184
	29	0.8299	32.19	2.146	328 3	21 52.2	50 34	3 22.3	1.2177	1.2875	6.50	0.8127
	30	0.8326	32.40	2.160	328 12	21 52.8	49 33	3 18.2	1.2199	1.2881	6.41	0.8069
	31	0.8354	+32.59	+2.173	328 18	21 53.2	48 32	3 14.1	+1.2220	+1.2888	+6.32	+0.8009
Nov.	1	0.8381	32.74	2.183	328 21	21 53.4	47 31	3 10.1	1.2238	1.2894	6.23	0.7948
	2	0.8408	32.85	2.190	328 22	21 53.5	46 31	3 6.1	1.2251	1.2901	6.14	0.7884
h	3	0.8435	32.93	2.195	328 24	21 53.6	45 30	3 2.0	1.2259	1.2907	6.04	0.7817
(3.●)	4	0.8463	32.97	2.198	328 27	21 53.8	44 30	2 58.0	1.2264	1.2914	5.96	0.7747
	5	0.8490	+33.03	+2.202	328 34	21 54.3	43 29	2 53.9	+1.2265	+1.2920	+5.85	+0.7674
	6	0.8517	33.10	2.207	328 45	21 55.0	42 29	2 49.9	1.2266	1.2927	5.75	0.7598
	7	0.8544	33.21	2.214	328 59	21 55.9	41 29	2 45.9	1.2269	1.2933	5.65	0.7520
	8	0.8572	33.33	2.222	329 15	21 57.0	40 29	2 41.9	1.2274	1.2940	5.55	0.7439
	9	0.8599	33.51	2.234	329 32	21 58.1	39 30	2 38.0	1.2283	1.2946	5.44	0.7356
	10	0.8627	+33.70	+2.247	329 48	21 59.2	38 30	2 34.0	+1.2298	+1.2953	+5.33	+0.7268
	11	0.8654	33.92	2.261	330 2	22 0.1	37 30	2 30.0	1.2316	1.2959	5.22	0.7179
	12	0.8681	34.13	2.275	330 12	22 0.8	36 31	2 26.1	1.2335	1.2965	5.11	0.7086
	13	0.8709	34.34	2.289	330 18	22 1.2	35 32	2 22.1	1.2356	1.2972	4.99	0.6989
	14	0.8736	34.50	2.300	330 22	22 1.5	34 33	2 18.2	1.2375	1.2978	4.88	0.6889
	15	0.8764	+34.64	+2.309	330 24	22 1.6	33 34	2 14.3	+1.2391	+1.2984	+4.76	+0.6785
	16	0.8791	+34.75	+2.317	330 25	22 1.7	32 35	2 10.3	+1.2404	+1.2990	+4.65	+0.6677

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
Nov. 16	0.8791	+34.75	+2.317	330 25	22 1.7	32 35	2 10.3	+1.2404	+1.2990	+4.65	+0.6677
17	0.8818	34.83	2.322	330 28	22 1.9	31 36	2 6.4	1.2412	1.2996	4.53	0.6565
18	0.8846	34.90	2.327	330 33	22 2.2	30 38	2 2.5	1.2417	1.3002	4.41	0.6449
19	0.8873	34.98	2.332	330 41	22 2.7	29 40	1 58.7	1.2421	1.3008	4.29	0.6329
$(4^{h}.0)$ 20	0.8901	35.10	2.340	330 53	22 3.5	28 42	1 54.8	1.2427	1.3014	4.17	0.6204
21	0.8928	+35.25	+2.350	331 9	22 4.6	27 44	1 50.9	+1.2434	+1.3019	+4.05	+0.6073
22	0.8955	35.43	2.362	331 26	22 5.7	26 46	1 47.1	1.2445	1.3025	3.93	0.5936
23	0.8983	35.66	2.377	331 43	22 6.9	25 48	1 43.2	1.2461	1.3030	3.80	0.5794
24	0.9010	35.91	2.394	331 59	22 7.9	24 51	1 39.4	1.2482	1.3035	3.67	0.5645
25	0.9038	36.18	2.412	332 12	22 8.8	23 54	1 35.6	1.2505	1.3040	3.54	0.5489
26	0.9065	+36.44	+2.429	332 21	22 9.4	22 57	1 31.8	+1.2530	+1.3045	+3.41	+0.5327
27	0.9092	36.67	2.445	332 27	22 9.8	21 59	1 27.9	1.2554	1.3049	3.28	0.5158
28	0.9120	36.87	2.459	332 30	22 10.0	21 2	1 24.1	1.2575	1.3054	3.14	0.4980
29	0.9147	37.02	2.468	332 31	22 10.1	20 5	1 20.3	1.2592	1.3058	3.01	0.4792
30	0.9175	37.15	2.476	332 32	22 10.1	19 8	1 16.5	1.2606	1.3062	2.87	0.4593
Dec. 1	0.9202	+37.25	+2.483	332 35	22 10.3	18 11	1 12.7	+1.2615	+1.3066	+2.74	+0.4383
2	0.9229	37.34	2.489	332 40	22 10.7	17 14	1 8.9	1.2622	1.3070	2.61	0.4161
3	0.9257	37.43	2.495	332 49	22 11.3	16 17	1 5.1	1.2628	1.3073	2.47	0.3926
4	0.9284	37.56	2.504	333 1	22 12.1	15 20	1 1.3	1.2635	1.3077	2.33	0.3677
$(5^{h}.0)$ 5	0.9312	37.71	2.514	333 14	22 12.9	14 23	0 57.5	1.2644	1.3080	2.19	0.3410
6	0.9339	+37.90	+2.527	333 29	22 13.9	13 27	0 53.8	+1.2657	+1.3084	+2.05	+0.3125
7	0.9366	38.14	2.543	333 43	22 14.9	12 30	0 50.0	1.2674	1.3087	1.91	0.2819
8	0.9394	38.38	2.559	333 55	22 15.7	11 33	0 46.2	1.2695	1.3090	1.77	0.2486
9	0.9421	38.63	2.575	334 4	22 16.3	10 37	0 42.5	1.2717	1.3092	1.63	0.2125
10	0.9449	38.86	2.591	334 9	22 16.6	9 41	0 38.7	1.2741	1.3094	1.49	0.1731
11	0.9476	+39.07	+2.605	334 11	22 16.7	8 45	0 35.0	+1.2763	+1.3096	+1.35	+0.1294
12	0.9503	39.24	2.616	334 11	22 16.7	7 49	0 31.3	1.2782	1.3098	1.21	0.0809
13	0.9531	39.40	2.627	334 10	22 16.7	6 53	0 27.5	1.2798	1.3100	1.06	0.0264
14	0.9558	39.50	2.633	334 10	22 16.7	5 57	0 23.8	1.2810	1.3101	0.92	9.9632
15	0.9586	39.60	2.640	334 12	22 16.8	5 1	0 20.1	1.2820	1.3103	0.77	9.8895
16	0.9613	+39.70	+2.647	334 18	22 17.2	4 5	0 16.3	+1.2828	+1.3104	+0.63	+9.8001
17	0.9640	39.83	2.655	334 26	22 17.7	3 9	0 12.6	1.2837	1.3104	0.49	9.6868
18	0.9668	39.98	2.665	334 37	22 18.5	2 13	0 8.9	1.2847	1.3105	0.34	9.5345
19	0.9695	40.18	2.679	334 50	22 19.3	1 17	0 5.1	1.2860	1.3105	0.20	9.2963
$(6^{h}.0)$ 20	0.9723	40.41	2.694	335 3	22 20.2	0 21	0 1.4	1.2878	1.3106	+0.05	+8.7251
21	0.9750	+40.67	+2.711	335 15	22 21.0	359 25	23 57.7	+1.2899	+1.3106	−0.09	−8.9619
22	0.9777	40.96	2.731	335 24	22 21.6	358 29	23 53.9	1.2923	1.3106	0.23	9.3736
23	0.9804	41.24	2.749	335 31	22 22.1	357 33	23 50.2	1.2949	1.3105	0.38	9.5815
24	0.9832	41.50	2.767	335 34	22 22.3	356 37	23 46.5	1.2975	1.3104	0.52	9.7207
25	0.9859	41.73	2.782	335 34	22 22.3	355 41	23 42.7	1.2998	1.3104	0.67	9.8259
26	0.9886	+41.91	+2.794	335 33	22 22.2	354 44	23 38.9	+1.3018	+1.3103	−0.81	−9.9106
27	0.9913	42.05	2.803	335 31	22 22.1	353 48	23 35.2	1.3034	1.3101	0.95	9.9813
28	0.9941	42.16	2.811	335 30	22 22.0	352 52	23 31.5	1.3046	1.3099	1.10	0.0420
29	0.9968	42.26	2.817	335 31	22 22.1	351 56	23 27.7	1.3055	1.3097	1.24	0.0946
30	0.9996	42.36	2.824	335 35	22 22.3	351 0	23 24.0	1.3064	1.3095	1.39	0.1420
31	1.0023	+42.48	+2.832	335 42	22 22.8	350 3	23 20.2	+1.3072	+1.3093	−1.53	−0.1844
32	1.0050	+42.63	+2.842	335 51	22 23.4	349 7	23 16.5	+1.3082	+1.3091	−1.67	−0.2231

MEAN PLACES FOR 1893.0. (January $0^d.0-0^d.593$, Washington.)

Name of Star.		Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
α Andromedæ		2.1	0 2 51.391	+ 3.0921	+ 28 29 58.73	+ 19.884
* β Cassiopeæ		2.4	0 3 28.122	3.1760	+ 58 33 33.36	19.851
* 22 Andromedæ		4.9	0 4 45.588	3.1035	+ 45 28 35.80	20.035
4 Draconis (H.)	S.P.	5.1	0 7 11.441	2.8816	+101 47 21.08	20.021
γ Pegasi (*Algenib*)		2.8	0 7 43.540	3.0841	+ 14 35 19.12	20.023
* σ Andromedæ		4.4	0 12 44.289	+ 3.1238	+ 36 11 30.89	+ 19.982
* ι Ceti		3.6	0 13 58.386	3.0527	− 9 25 2.64	19.956
* 6 Ursæ Minoris	S.P.	6.2	0 14 20.918	0.1910	+ 91 42 24.39	19.040
* 44 Piscium		5.8	0 19 55.029	3.0733	+ 1 20 49.54	19.952
β Hydri		2.8	0 20 7.230	3.2959	− 77 51 24.95	20.283
12 Ceti		6.0	0 24 34.672	+ 3.0611	− 4 32 54.66	+ 19.936
κ Draconis	S.P.	3.8	0 28 54.997	2.5900	+109 37 19.22	19.988
* π Andromedæ		4.4	0 31 9.910	3.1915	+ 33 7 48.76	19.869
α Cassiopeæ (*var.*)		2.3	0 34 26.175	3.3757	+ 55 57 1.39	19.786
β Ceti		2.2	0 38 13.135	3.0141	− 18 34 26.71	19.799
21 Cassiopeæ		5.7	0 38 34.803	+ 3.8634	+ 74 24 11.32	+ 19.749
* ο Cassiopeæ		4.7	0 38 45.705	3.3907	+ 47 41 55.00	19.752
* δ Piscium		4.8	0 43 7.812	3.1076	+ 7 0 9.56	19.650
32^2 Camelop. (H.)	S.P.	5.2	0 48 20.650	0.4003	+ 96 0 20.02	19.596
* γ Cassiopeæ		2.3	0 50 15.021	3.5815	+ 60 8 13.64	19.559
* μ Andromedæ		4.0	0 50 48.791	+ 3.3122	+ 37 55 8.34	+ 19.613
* 43 Cephei (H.)		4.6	0 54 9.988	7.2840	+ 85 40 58.52	19.495
ε Piscium		4.3	0 57 23.366	3.1094	+ 7 18 50.24	19.451
β Andromedæ		2.2	1 3 44.460	3.3453	+ 35 3 11.20	19.160
* ε Tucanæ		4.9	1 12 8.576	2.0545	− 69 26 39.64	19.167
* f Piscium		5.1	1 12 16.731	+ 3.0899	+ 3 3 3.20	+ 19.034
θ^1 Ceti		3.6	1 18 40.480	2.9971	− 8 44 8.16	18.663
α Ursæ Minoris (*Polaris*)		2.2	1 19 41.941	23.8790	+ 88 44 15.00	18.852
38 Cassiopeæ		5.9	1 23 16.071	4.3830	+ 69 42 49.29	18.668
* κ Octantis	S.P.	5.4	1 23 41.960	8.7992	− 94 45 46.17	18.732
η Piscium		3.7	1 25 45.433	+ 3.2030	+ 14 47 38.77	+ 18.658
* υ Andromedæ		4.2	1 30 31.040	3.5056	+ 40 52 12.99	18.139
* π Piscium		5.5	1 31 25.563	3.1746	+ 11 35 39.21	18.526
α Eridani (*Achernar*)		0.4	1 33 43.391	2.2319	− 57 46 49.75	18.352
* ν Piscium		4.6	1 35 51.762	3.1181	+ 4 56 45.58	18.323
υ Piscium		4.4	1 39 44.583	+ 3.1626	+ 8 37 7.91	+ 18.210
* ζ Ceti		3.6	1 46 10.733	2.9619	− 10 51 53.48	17.816
β Arietis		2.8	1 48 43.701	3.3042	+ 20 17 5.27	17.720
50 Cassiopeæ		4.1	1 54 17.887	5.0178	+ 71 54 11.82	17.634
* γ Andromedæ		2.2	1 57 19.831	3.6618	+ 41 48 57.72	17.433
α Arietis		2.1	2 1 8.462	+ 3.3717	+ 22 57 22.54	+ 17.164
α Draconis	S.P.	3.7	2 1 29.602	1.6239	+115 6 46.18	17.295
* β Trianguli		3.1	2 3 10.596	3.5557	+ 34 28 51.46	17.195
ξ^1 Ceti		4.5	2 7 19.710	+ 3.1744	+ 8 20 40.33	17.022
* 4 Ursæ Minoris	S.P.	4.9	2 9 16.063	− 0.3172	+101 56 58.66	16.905
* γ Trianguli		4.3	2 10 57.162	+ 3.5520	+ 33 21 7.72	+ 16.835
* 67 Ceti		5.6	2 11 38.738	2.9695	− 6 54 55.97	16.725
* δ Hydri		4.2	2 19 50.781	1.0558	− 69 8 46.60	16.447
ι Cassiopeæ		4.6	2 20 14.745	4.8670	+ 66 55 15.47	16.418
ξ^2 Ceti		4.5	2 22 28.190	+ 3.1841	+ 7 58 48.60	+ 16.285

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1893.0. (January $0^d.0-0^d.593$, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
5 Ursæ Minoris . S.P.	4.5	2 27 45.235	− 0.1860	+103 49 42.19	+ 16.012
* μ Hydri . . .	5.3	2 33 56.251	− 1.4261	− 79 34 33.20	15.686
* δ Ceti . . .	4.1	2 33 59.888	+ 3.0731	− 0 8 0.57	15.687
* θ Persei . . .	4.2	2 36 53.481	4.0716	+ 48 46 31.78	15.445
γ Ceti . . .	3.6	2 37 45.336	3.1036	+ 2 47 4.56	15.329
* σ Arietis . . .	5.5	2 45 35.075	+ 3.3050	+ 14 38 26.95	+ 15.003
β Ursæ Minoris . S.P.	2.2	2 51 1.139	− 0.2274	+105 24 26.11	14.720
* 47 Cephei (H.) . .	5.7	2 51 52.023	+ 7.7380	+ 78 59 42.23	14.669
* ε Arietis . . .	4.6	2 53 5.593	3.4217	+ 20 54 43.91	14.599
α Ceti . . .	2.6	2 56 41.131	3.1307	+ 3 40 10.76	14.298
* β Persei (*Algol*) (*var.*)	2.3	3 1 12.348	+ 3.8849	+ 40 32 34.65	+ 14.106
48 Cephei (H.) . .	5.5	3 6 44.941	7.4196	+ 77 20 27.13	13.703
ζ Arietis . . .	4.8	3 8 45.033	3.4399	+ 20 38 51.25	13.544
α Persei . . .	1.9	3 16 41.036	+ 4.2593	+ 49 28 47.58	13.077
* ι Hydri . . .	5.7	3 18 37.886	− 1.5914	− 77 46 44.33	13.032
* ρ Octantis . . S.P.	5.7	3 18 39.894	+13.0275	− 95 53 34.04	+ 12.935
γ^2 Ursæ Minoris . S.P.	3.2	3 20 54.015	− 0.1310	+107 47 6.97	12.811
* f Tauri . . .	4.3	3 24 57.880	+ 3.3054	+ 12 34 11.08	12.556
ε Eridani . . .	3.7	3 27 53.331	2.8238	− 9 49 13.84	12.382
δ Persei . . .	3.1	3 35 18.403	4.2515	+ 47 26 41.57	11.793
* γ Camelopardalis (H.).	4.6	3 39 3.846	+ 6.2441	+ 71 0 6.61	+ 11.519
η Tauri . . .	3.1	3 41 7.382	3.5575	+ 23 46 25.78	11.366
ζ Persei . . .	3.0	3 47 24.336	+ 3.7610	+ 31 33 55.12	10.934
ζ Ursæ Minoris . S.P.	4.6	3 47 53.200	− 2.2443	+101 52 35.55	10.931
* γ Hydri . . .	3.3	3 48 53.772	− 0.9928	− 74 34 0.30	10.986
* ε Persei . . .	3.0	3 50 40.323	+ 4.0110	+ 39 42 0.69	+ 10.705
γ Eridani . . .	3.0	3 53 2.266	2.7987	− 13 48 47.63	10.434
* A^1 Tauri . . .	4.6	3 58 22.156	3.5405	+ 21 47 20.11	10.069
* c Persei . . .	4.3	4 0 53.583	4.3384	+ 47 25 34.54	9.921
Groombr. 2320 . S.P.	5.5	4 6 1.605	0.1412	+111 54 28.36	9.497
* o^1 Eridani . . .	4.2	4 6 38.532	+ 2.9270	− 7 7 1.17	+ 9.604
γ Tauri . . .	3.8	4 13 42.236	+ 3.4094	+ 15 22 7.93	8.942
* η Ursæ Minoris . S.P.	5.0	4 20 38.031	− 1.8124	+103 59 53.53	8.170
ε Tauri . . .	3.6	4 22 22.081	+ 3.4979	+ 18 56 33.55	8.242
η Draconis . . S.P.	2.0	4 22 32.675	+ 0.8070	+118 14 36.98	8.218
* δ Mensæ . . .	5.6	4 25 13.274	− 4.2140	− 80 27 53.09	+ 8.064
* m Persei . . .	6.0	4 25 53.180	+ 4.2110	+ 42 50 4.80	7.986
A Draconis . . S.P.	5.0	4 28 11.773	− 0.1335	+111 0 2.06	7.799
α Tauri (*Aldebaran*) .	1.0	4 29 46.827	+ 3.4378	+ 16 17 37.54	7.500
* τ Tauri . . .	4.5	4 35 49.345	3.5958	+ 22 45 4.20	7.174
α Camelopardalis .	4.4	4 43 24.595	+ 5.9274	+ 66 9 36.42	+ 6.576
* i Tauri . . .	5.2	4 45 6.863	3.5057	+ 18 39 25.94	6.390
ι Aurigæ . . .	2.8	4 50 1.518	3.9011	+ 32 59 46.28	6.006
* ζ Aurigæ . . .	3.9	4 54 59.899	+ 4.1857	+ 40 55 8.91	5.605
ε Ursæ Minoris . S.P.	4.5	4 56 56.635	− 6.3204	+ 97 47 14.18	5.451
11 Orionis . . .	4.7	4 58 27.252	+ 3.4247	+ 15 15 16.55	+ 5.281
* β Eridani . . .	2.9	5 2 35.360	2.9487	− 5 13 30.30	4.913
α Aurigæ (*Capella*) .	0.1	5 8 47.065	4.4253	+ 45 53 18.75	4.009
β Orionis (*Rigel*) .	0.3	5 9 23.722	2.8814	− 8 19 32.35	4.386
* τ Orionis . . .	3.8	5 12 24.645	+ 2.9128	− 6 57 38.04	+ 4.123

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1893.0. (January 0d.0—0d.593, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
β Tauri	1.8	5 19 31.664	+ 3.7896	+ 28 30 59.53	+ 3.343
Groombridge 966	6.4	5 25 25.562	8.0032	+ 74 58 18.87	3.033
* χ Aurigæ	5.0	5 25 45.893	3.9052	+ 32 6 45.76	3.005
δ Orionis (*var.*)	2.3	5 26 32.400	3.0635	− 0 22 43.57	2.913
* Groombridge 944	6.4	5 27 44.340	18.6737	+ 85 8 31.14	2.826
α Leporis	2.7	5 28 0.652	+ 2.6448	− 17 53 57.23	+ 2.789
ε Orionis	1.8	5 30 47.020	3.0424	− 1 16 14.33	2.550
α Columbæ	2.7	5 35 46.531	+ 2.1728	− 34 7 53.44	2.071
ω Draconis . . S.P.	4.9	5 37 34.742	− 0.3534	+111 11 33.60	1.635
* κ Orionis	2.3	5 42 40.875	+ 2.8450	− 9 42 28.89	1.517
ψ¹ Draconis . . S.P.	4.8	5 43 50.441	− 1.0784	+107 47 55.85	+ 1.686
* ν Aurigæ	4.1	5 44 4.382	+ 4.1545	+ 39 6 59.79	1.429
* δ Doradus	4.4	5 44 35.069	0.1050	− 65 46 32.23	1.327
α Orionis (*var.*)	0.9	5 49 22.726	3.2471	+ 7 23 11.96	0.936
* β Aurigæ	2.0	5 51 40.816	4.4018	+ 44 56 9.16	0.718
* θ Aurigæ	2.9	5 52 25.532	+ 4.0921	+ 37 12 16.40	+ 0.574
ν Orionis	4.5	6 1 27.826	+ 3.4274	+ 14 46 50.69	− 0.159
δ Ursæ Minoris . S.P.	4.4	6 6 49.230	− 19.4740	+ 93 23 16.17	0.648
22 Camelopardalis (H.).	4.7	6 7 3.055	+ 6.6170	+ 69 21 23.41	0.735
* η Geminorum	3.5	6 8 25.168	3.6228	+ 22 32 14.51	0.753
μ Geminorum	3.2	6 16 29.268	+ 3.6314	+ 22 34 4.64	− 1.563
* ψ¹ Aurigæ	5.1	6 16 39.496	4.6263	+ 49 20 30.73	1.467
α Argûs (*Canopus*)	−0.8	6 21 34.678	1.3305	− 52 38 14.29	1.876
* ν Geminorum	4.2	6 22 36.579	+ 3.5630	+ 20 16 45.67	1.997
* χ Draconis . . S.P.	5.3	6 22 59.096	− 1.0799	+107 18 49.63	1.632
γ Geminorum	2.0	6 31 31.844	+ 3.4673	+ 16 29 24.54	− 2.798
* ε Geminorum	3.2	6 37 20.926	3.6932	+ 25 14 11.80	3.267
* ψ⁵ Aurigæ	5.4	6 39 1.563	4.3286	+ 43 41 0.01	3.250
† α Canis Majoris (*Sirius*)	−1.4	6 40 25.989	2.6436	− 16 34 10.88	4.726
* θ Geminorum	3.7	6 45 44.252	+ 3.9603	+ 34 5 23.56	4.007
* ζ Mensæ	5.6	6 48 56.845	− 4.9077	− 80 42 1.97	− 4.169
50 Draconis . S.P.	5.6	6 49 49.330	− 1.9099	+104 41 32.69	4.400
51 Cephei (H.)	5.3	6 50 14.857	+29.8170	+ 87 12 52.07	4.400
ε Canis Majoris	1.5	6 54 25.262	2.3578	− 28 49 36.73	4.730
* ζ Geminorum (*var.*)	4.0	6 57 45.809	3.5622	+ 20 43 36.17	5.019
δ Canis Majoris	1.9	7 4 2.431	+ 2.4385	− 26 13 24.64	− 5.521
* 63 Aurigæ	5.2	7 4 17.772	4.1360	+ 39 29 41.05	5.534
* 25 Camelopardalis	5.3	7 8 33.498	+12.9414	+ 82 36 58.69	5.941
* γ² Volantis (*var.*)	3.9	7 9 39.106	− 0.4947	− 70 19 31.88	6.002
δ Draconis . . S.P.	3.1	7 12 31.826	+ 0.0287	+112 31 36.08	6.326
δ Geminorum	3.5	7 13 43.984	+ 3.5876	+ 22 10 43.97	− 6.356
τ Draconis . . S.P.	4.5	7 17 36.666	− 1.1191	+106 50 35.83	6.770
Piazzi vii. 67	5.7	7 19 44.879	+ 6.2956	+ 68 41 0.74	6.875
* β Canis Minoris	3.1	7 21 20.934	3.2595	+ 8 30 16.08	7.007
α² Geminorum (*Castor*)	1.9	7 27 46.447	+ 3.8379	+ 32 7 22.46	7.570
λ Ursæ Minoris . S.P.	6.5	7 30 18.771	−65.8800	+ 91 1 35.92	− 7.708
† α Canis Min. (*Procyon*)	0.5	7 33 42.052	+ 3.1433	+ 5 29 55.75	9.008
β Geminorum (*Pollux*)	1.2	7 38 46.134	3.6788	+ 28 17 3.17	8.433
* 26 Lyncis	5.8	7 46 55.261	4.3870	+ 47 50 28.89	9.040
φ Geminorum	5.0	7 46 56.963	+ 3.6795	+ 27 2 32.67	− 9.046

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

† Periodic corrections given in the Appendix are still to be applied to the positions of Sirius and Procyon.

MEAN PLACES FOR 1893.0. (January 0d.0—0d.593, Washington.)

	Name of Star.		Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
				h	m	s	s	°	′	″	″
*	Groombridge 1374		5.6	7	47	22.842	+ 7.2793	+ 74	12	10.53	— 9.089
	ε Draconis	S.P.	3.9	7	48	31.915	— 0.1808	+110	0	16.47	9.173
*	ω^1 Cancri		6.0	7	54	27.462	+ 3.6368	+ 25	41	7.63	9.600
	3 Ursæ Majoris (H.)		5.5	8	2	9.971	6.0447	+ 68	47	18.04	10.188
	15 Argûs (ρ)		3.1	8	2	59.233	2.5545	— 23	59	45.92	10.206
*	ζ^1 Cancri		4.8	8	6	4.536	+ 3.4461	+ 17	58	10.30	— 10.618
*	β Cancri		3.8	8	10	42.756	+ 3.2583	+ 9	30	53.48	10.870
	κ Cephei (*pr.*)	S.P.	4.4	8	12	29.178	— 1.9290	+102	36	39.44	10.985
*	30 Monocerotis		3.9	8	20	18.822	+ 2.9999	— 3	33	27.27	11.519
*	θ Chamæleontis		4.6	8	23	50.477	— 1.7162	— 77	8	20.76	11.753
	η Cancri		5.4	8	26	31.328	+ 3.4779	+ 20	48	15.43	— 12.018
	Groombr. 3241	S.P.	6.5	8	30	27.997	— 0.2223	+107	49	51.00	12.220
*	σ Hydræ		4.5	8	33	10.024	+ 3.1456	+ 3	43	0.28	12.446
*	γ Cancri		4.9	8	37	5.672	3.4800	+ 21	51	10.54	12.737
	ε Hydræ		3.5	8	41	6.614	3.1815	+ 6	48	39.84	13.017
*	σ^2 Cancri (*mean*)		5.5	8	47	43.000	+ 3.6727	+ 30	59	3.46	— 13.421
	ι Ursæ Majoris		3.3	8	51	52.864	+ 4.1318	+ 48	27	41.01	13.920
	12 Year Cat. 1879	S.P.	5.3	8	52	25.984	— 2.5603	+ 99	50	57.12	13.673
	σ^2 Ursæ Majoris		5.0	9	0	58.569	+ 5.3501	+ 67	34	6.90	14.295
	κ Cancri		5.1	9	1	57.157	3.2555	+ 11	5	54.99	14.303
*	θ Hydræ		4.0	9	8	47.887	+ 3.1259	+ 2	45	55.33	— 15.029
*	β Argûs		2.0	9	12	1.444	0.6765	— 69	16	35.25	14.808
	ι Argûs		2.6	9	14	13.378	1.6010	— 58	49	33.59	15.003
*	α Lyncis		3.3	9	14	32.155	3.6682	+ 34	50	40.37	15.039
	α Cephei	S.P.	2.6	9	16	1.566	1.4364	+117	52	4.01	15.179
	1 Draconis (H.)		4.5	9	21	48.715	+ 8.9713	+ 81	47	55.52	— 15.481
	α Hydræ		2.1	9	22	19.772	2.9491	— 8	11	42.17	15.461
	d Ursæ Majoris		4.8	9	25	0.916	5.3949	+ 70	18	0.61	15.579
	θ Ursæ Majoris		3.2	9	25	41.917	4.0392	+ 52	9	52.65	16.231
	β Cephei (*pr.*)	S.P.	3.4	9	27	16.685	0.7929	+109	54	32.65	15.759
*	10 Leonis Minoris		4.7	9	27	40.152	+ 3.6931	+ 36	52	20.66	— 15.795
*	ο Leonis		3.8	9	35	26.403	+ 3.2066	+ 10	22	43.91	16.232
*	ζ Chamæleontis		5.2	9	37	1.671	— 1.5727	— 80	27	37.83	16.282
	ε Leonis		3.2	9	39	46.676	+ 3.4145	+ 24	16	0.00	16.436
	11 Cephei	S.P.	4.8	9	40	21.334	0.9002	+109	10	52.33	16.541
	μ Leonis		4.0	9	46	40.705	+ 3.4215	+ 26	30	38.52	— 16.806
*	19 Leonis Minoris		5.2	9	51	7.888	3.6941	+ 41	33	53.95	16.972
	79 Draconis	S.P.	6.6	9	51	31.821	0.7275	+106	48	13.90	17.015
*	π Leonis		5.0	9	54	33.551	3.1740	+ 8	33	26.60	17.145
	α Leonis (*Regulus*)		1.3	10	2	40.430	3.2002	+ 12	29	23.93	17.483
	32 Ursæ Majoris		5.7	10	10	15.701	+ 4.4167	+ 65	38	30.26	— 17.822
*	λ Ursæ Majoris		3.6	10	10	38.598	3.6382	+ 43	26	53.53	17.882
	γ^1 Leonis		2.5	10	14	4.414	3.3143	+ 20	22	57.49	18.094
*	μ Hydræ		4.1	10	20	54.973	2.9008	— 16	17	25.94	18.317
*	β Leonis Minoris		4.3	10	21	41.778	3.4856	+ 37	15	19.43	18.323
*	α Antliæ		4.5	10	22	15.294	+ 2.7394	— 30	31	24.47	— 18.224
	9 Draconis (H.)		5.0	10	26	0.037	5.2531	+ 76	15	49.91	18.406
	ρ Leonis		4.0	10	27	10.676	3.1639	+ 9	51	25.25	18.439
	226 Cephei (B.)	S.P.	5.7	10	30	23.766	1.0762	+104	19	30.05	18.531
*	β Octantis	S.P.	4.4	10	35	5.895	+ 6.4615	— 98	3	28.74	— 18.694

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1893.0. (January $0^d.0-0^d.593$, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
* 41 Leonis Minoris	5.1	10 37 35.895	+ 3.2702	+ 23 44 54.48	− 18.744
η Argûs (*var.*)	1–6	10 40 54.532	2.3142	− 59 7 19.32	18.874
l Leonis	5.3	10 43 38.020	3.1583	+ 11 6 40.49	18.978
* δ³ Chamæleontis	4.7	10 44 46.796	0.6344	− 79 58 33.96	18.963
ι Cephei S.P.	3.6	10 45 52.168	2.1226	+114 21 44.72	18.880
* 46 Leonis Minoris	3.9	10 47 19.667	+ 3.3687	+ 34 47 30.59	− 19.301
* Groombridge 1706	6.3	10 51 23.233	4.9585	+ 78 20 35.91	19.189
α Ursæ Majoris	2.0	10 57 7.378	+ 3.7445	+ 62 19 42.89	19.369
* η Octantis	6.1	11 0 4.272	− 0.2251	− 84 1 5.91	19.371
* p³ Leonis	6.2	11 1 26.639	+ 3.0597	+ 2 32 10.56	19.488
* ψ Ursæ Majoris	3.2	11 3 38.850	+ 3.3921	+ 45 4 43.09	− 19.508
δ Leonis	2.7	11 8 25.095	3.1978	+ 21 6 35.35	19.690
* ν Ursæ Majoris	3.7	11 12 42.125	3.2568	+ 33 40 41.35	19.577
δ Crateris	3.9	11 13 59.483	2.9066	− 14 11 59.00	19.468
ο Cephei S.P.	5.1	11 14 14.001	2.4455	+112 28 25.76	19.672
τ Leonis	5.1	11 22 26.072	+ 3.0860	+ 3 26 43.56	− 19.805
λ Draconis	4.0	11 25 2.855	3.6175	+ 69 55 17.62	19.841
* ξ Hydræ	3.8	11 27 44.311	2.9435	− 31 15 56.61	19.868
υ Leonis	4.4	11 31 28.216	3.0713	− 0 13 59.18	19.863
γ Cephei S.P.	3.5	11 34 57.216	2.4181	+102 57 53.80	20.077
* χ Ursæ Majoris	3.9	11 40 24.046	+ 3.1892	+ 48 22 21.37	− 19.963
β Leonis	2.2	11 43 36.123	3.0637	+ 15 10 12.49	20.120
γ Ursæ Majoris	2.4	11 48 12.206	3.1803	+ 54 17 22.37	20.028
Groombr. 4163 S.P.	7.0	11 49 37.811	2.8684	+106 11 6.56	20.023
* π Virginis	4.6	11 55 23.356	3.0741	+ 7 12 38.83	20.087
ο Virginis	4.3	11 59 45.512	+ 3.0575	+ 9 19 38.09	− 20.015
* ε Corvi	3.2	12 4 37.283	3.0835	− 22 1 28.71	20.049
4 Draconis (H.)	5.1	12 7 11.441	2.8816	+ 78 12 38.92	20.021
γ Corvi	2.7	12 10 18.206	3.0800	− 16 56 52.25	20.017
* 2 Canum Venaticorum	6.0	12 10 45.889	3.0212	+ 41 15 21.26	20.064
β Chamæleontis	4.5	12 12 4.488	+ 3.4066	− 78 43 4.35	− 20.002
* 6 Ursæ Minoris	6.2	12 14 20.918	0.1910	+ 88 17 35.61	19.940
η Virginis	4.0	12 14 25.906	3.0687	− 0 4 20.04	20.041
α¹ Crucis	0.9	12 20 38.912	3.2976	− 62 30 21.73	20.012
* δ² Corvi	3.1	12 24 19.798	3.1030	− 15 55 10.26	20.083
* β Canum Venaticorum	4.4	12 28 39.694	+ 2.8589	+ 41 56 19.85	− 19.614
β Corvi	2.8	12 28 45.974	3.1422	− 22 48 18.15	19.961
κ Draconis	3.8	12 28 54.997	2.5900	+ 70 22 40.78	19.888
* γ Virginis (*mean*)	2.9	12 36 14.326	3.0385	− 0 51 45.83	19.809
21 Cassiopeæ S.P.	5.7	12 38 34.803	3.8634	+105 35 48.68	19.749
* 31 Comæ Berenices	5.1	12 46 29.315	+ 2.9298	+ 28 7 22.30	− 19.658
32² Camelopardalis (H.)	5.2	12 48 20.650	0.4003	+ 83 59 39.98	19.596
* γ Cassiopeæ S.P.	2.3	12 50 15.021	3.5815	+119 51 46.36	19.559
α Canum Venaticorum	3.2	12 51 1.406	2.8150	+ 38 53 46.39	19.509
* 43 Cephei (H.) S.P.	4.6	12 54 9.988	7.2840	+ 94 19 1.48	19.495
* δ Muscæ	3.8	12 54 55.576	+ 4.1692	− 70 58 16.54	− 19.471
* ε Virginis	3.1	12 56 51.067	2.9879	+ 11 32 3.37	19.414
θ Virginis	4.6	13 4 24.553	3.1014	− 4 58 3.84	19.308
* 20 Canum Venaticorum	4.7	13 12 44.688	2.6963	+ 41 8 9.40	19.031
α Virginis (*Spica*)	1.1	13 19 33.328	+ 3.1541	− 10 36 10.05	− 18.895

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1893.0. (January 0ᵈ.0—0ᵈ.593, Washington.)

Name of Star.	Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	′	″	″
α Urs. Min. (*Polaris*) S.P.	2.2	13	19	41.941	+ 23.8790	+ 91	15	45.00	— 18.852
38 Cassiopeæ S.P.	5.9	13	23	16.071	4.3830	+110	17	10.71	18.668
* κ Octantis	5.4	13	23	41.960	8.7992	— 85	14	13.83	18.732
ζ Virginis	3.6	13	29	14.435	3.0534	— 0	2	55.46	18.512
* B. A. C. 4536	5.0	13	30	1.115	2.6820	+ 37	43	50.20	18.534
* m Virginis	5.4	13	35	59.748	+ 3.1436	— 8	9	46.42	— 18.279
η Ursæ Majoris	1.9	13	43	19.524	2.3709	+ 49	50	50.22	18.074
η Bootis	2.8	13	49	35.408	2.8568	+ 18	56	3.14	18.164
50 Cassiopeæ S.P.	4.1	13	54	17.887	5.0178	+108	5	48.18	17.634
* θ Apodis	Var.	13	54	54.879	5.6851	— 76	16	46.25	17.578
β Centauri	0.7	13	56	16.190	+ 4.1807	— 59	51	24.07	— 17.580
* π Hydræ	3.6	14	0	16.613	3.4017	— 26	9	57.45	17.355
α Draconis	3.7	14	1	29.602	1.6239	+ 64	53	13.82	17.295
* d Bootis	4.8	14	5	31.190	2.7387	+ 25	35	54.91	17.193
* κ Virginis	4.2	14	7	11.270	+ 3.1943	— 9	46	32.08	16.916
* 4 Ursæ Minoris	4.9	14	9	16.063	— 0.3172	+ 78	3	1.34	— 16.905
* δ Octantis	5.0	14	9	48.339	+ 9.0133	— 83	10	36.87	16.930
α Bootis (*Arcturus*)	0.2	14	10	46.859	2.7351	+ 19	44	22.46	18.876
* λ Bootis	4.3	14	12	18.957	2.2825	+ 46	34	46.85	16.654
* λ Virginis	4.7	14	13	19.181	3.2384	— 12	52	42.51	16.738
ι Cassiopeæ S.P.	4.6	14	20	14.745	+ 4.8670	+113	4	44.53	— 16.418
θ Bootis	4.1	14	21	33.317	2.0441	+ 52	20	43.23	16.756
ρ Bootis	3.6	14	27	13.188	+ 2.5877	+ 30	50	28.11	15.953
5 Ursæ Minoris	4.5	14	27	45.235	— 0.1860	+ 76	10	17.81	16.012
α Centauri (*mean*)	-0.1	14	32	19.978	+ 4.0372	— 60	23	36.55	15.043
* μ Hydri S.P.	5.3	14	33	56.251	— 1.4261	—100	25	26.80	— 15.686
* α Apodis	4.1	14	34	35.287	+ 7.2092	— 78	35	24.29	15.662
* 33 Bootis	5.3	14	34	51.310	2.2342	+ 44	51	58.31	15.704
ε Bootis	2.6	14	40	18.907	2.6214	+ 27	31	31.43	15.333
α^2 Libræ	2.9	14	44	57.491	+ 3.3100	— 15	35	49.02	15.158
β Ursæ Minoris	2.2	14	51	1.139	— 0.2274	+ 74	35	33.89	— 14.720
* 47 Cephei (H.) S.P.	5.7	14	51	52.023	+ 7.7380	+101	0	17.77	14.669
* γ Scorpii	3.4	14	57	48.410	3.5001	— 24	51	40.23	14.366
β Bootis	3.7	14	57	54.957	2.2601	+ 40	48	45.53	14.353
48 Cephei (H.) S.P.	5.5	15	6	44.941	7.4196	+102	39	32.87	13.703
* δ Bootis	3.5	15	11	11.389	+ 2.4209	+ 33	42	51.47	— 13.575
β Libræ	2.9	15	11	14.920	3.2222	— 8	59	16.52	13.497
* ρ Octantis	5.7	15	18	39.894	13.0275	— 84	6	25.96	12.935
μ^1 Bootis	4.5	15	20	26.916	+ 2.2663	+ 37	45	9.42	12.771
γ^2 Ursæ Minoris	3.2	15	20	54.015	— 0.1310	+ 72	12	53.03	12.811
* β Coronæ Borealis	3.9	15	23	25.082	+ 2.4751	+ 29	28	28.36	— 12.585
α Coronæ Borealis	2.3	15	30	9.473	2.5394	+ 27	4	29.74	12.296
α Serpentis	2.7	15	38	59.842	2.9519	+ 6	45	44.59	11.539
* γ Camelop. (H.) S.P.	4.6	15	39	3.846	6.2441	+108	59	53.39	11.519
ε Serpentis	3.7	15	45	28.931	+ 2.9873	+ 4	48	0.36	11.037
ζ Ursæ Minoris	4.6	15	47	53.200	— 2.2443	+ 78	7	24.45	— 10.931
ε Coronæ Borealis	4.1	15	53	9.525	+ 2.4833	+ 27	11	16.42	10.602
δ Scorpii	2.6	15	54	0.380	3.5392	— 22	19	0.60	10.514
β^1 Scorpii	2.9	15	59	12.915	3.4813	— 19	30	44.31	10.124
* δ^1 Apodis	4.9	16	4	22.076	+ 8.7864	— 78	25	29.77	— 9.694

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1893.0. (January 0d.0—0d.593, Washington.)

Name of Star.		Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
			h	m	s	s	°	′	″	″
* φ Herculis . . .		4.2	16	5	23.677	+ 1.8815	+ 45	12	56.02	— 9.573
Groombridge 2320 .		5.5	16	6	1.605	0.1412	+ 68	5	31.64	9.497
δ Ophiuchi . . .		2.8	16	8	44.282	3.1399	— 3	25	6.65	9.500
* σ Coronæ Borealis (*mean*)		5.3	16	10	40.227	2.2448	+ 34	7	48.39	9.247
τ Herculis . . .		3.9	16	16	31.491	1.8012	+ 46	34	5.32	8.727
* γ Apodis . . .		4.0	16	17	3.426	+ 9.0754	— 78	39	21.34	— 8.708
* η Ursæ Minoris . .		5.0	16	20	38.031	— 1.8124	+ 76	0	6.47	8.170
η Draconis . . .		2.8	16	22	32.675	+ 0.8070	+ 61	45	23.02	8.218
α Scorpii (*Antares*) .		1.2	16	22	50.779	3.6708	— 26	11	39.10	8.286
β Herculis . . .		2.8	16	25	37.208	+ 2.5776	+ 21	43	22.84	8.045
A Draconis . . .		5.0	16	28	11.773	— 0.1335	+ 68	59	57.94	— 7.799
ζ Ophiuchi . . .		2.8	16	31	16.000	+ 3.2994	— 10	21	0.18	7.550
α Trianguli Australis .		2.2	16	37	20.293	6.3068	— 68	49	49.08	7.127
η Herculis . . .		3.7	16	39	13.626	2.0539	+ 39	7	33.22	7.012
α Camelopardalis	S. P.	4.4	16	43	24.595	5.9274	+113	50	23.58	6.576
κ Ophiuchi . . .		3.4	16	52	36.217	+ 2.8376	+ 9	32	30.08	— 5.818
ε Ursæ Minoris . .		4.5	16	56	56.635	— 6.3204	+ 82	12	45.82	5.451
d Herculis . . .		5.3	16	57	39.318	+ 2.2114	+ 33	43	24.30	5.386
* η Ophiuchi . . .		2.5	17	4	14.448	3.4358	— 15	35	31.65	4.753
α¹ Herculis (*var.*) . .		3.1	17	9	46.106	2.7336	+ 14	30	45.13	4.333
* π Herculis . . .		3.4	17	11	19.240	+ 2.0892	+ 36	55	47.61	— 4.219
* θ Ophiuchi . . .		3.3	17	15	26.261	3.6796	— 24	53	32.81	3.928
b Ophiuchi (*var.*) .		4.4	17	19	50.119	3.6593	— 24	4	35.19	3.627
* δ Aræ . . .		3.8	17	21	26.499	5.4025	— 60	35	38.94	3.498
Groombr. 966 .	S. P.	6.4	17	25	25.562	8.0032	+105	1	41.13	3.033
* Groombr. 944 .	S. P.	6.4	17	27	44.340	+18.6737	+ 94	51	28.86	— 2.826
β Draconis . . .		3.0	17	28	0.931	1.3536	+ 52	22	50.03	2.790
α Ophiuchi . . .		2.2	17	29	58.048	2.7830	+ 12	38	17.35	2.857
* ι Herculis . . .		4.0	17	36	26.790	+ 1.6968	+ 46	3	48.00	2.058
ω Draconis . . .		4.9	17	37	34.742	— 0.3534	+ 68	48	26.40	1.635
μ Herculis . . .		3.5	17	42	16.278	+ 2.3465	+ 27	47	0.05	— 2.310
ψ¹ Draconis . . .		4.8	17	43	50.441	— 1.0784	+ 72	12	4.15	1.686
* θ Herculis . . .		3.9	17	52	34.974	+ 2.0552	+ 37	15	53.55	0.630
γ Draconis . . .		2.5	17	54	7.289	1.3916	+ 51	30	5.32	0.544
γ² Sagittarii . . .		2.9	17	58	56.041	3.8516	— 30	25	30.06	— 0.312
* υ Herculis . . .		3.9	18	3	22.124	+ 2.3395	+ 28	44	52.46	+ 0.298
δ Ursæ Minoris . .		4.4	18	6	49.230	—19.4740	+ 86	36	43.83	0.648
22 Camelop. (H.) .	S. P.	4.7	18	7	3.055	+ 6.6170	+110	38	36.59	0.735
μ¹ Sagittarii . . .		4.1	18	7	21.857	3.5866	— 21	5	11.07	0.632
η Serpentis . . .		3.5	18	15	46.383	3.1024	— 2	55	33.56	0.704
* λ Sagittarii . . .		2.9	18	21	22.026	+ 3.7025	— 25	28	50.33	+ 1.644
* χ Draconis . . .		5.3	18	22	59.096	— 1.0799	+ 72	41	10.37	1.632
1 Aquilæ . . .		4.0	18	29	23.065	+ 3.2645	— 8	19	7.16	2.234
* ζ Pavonis . . .		4.2	18	30	31.765	7.0278	— 71	31	5.86	2.523
α Lyræ (*Vega*) . .		0.2	18	33	18.959	2.0314	+ 38	41	2.88	3.178
β Lyræ (*var.*) . .		3.6	18	46	7.780	+ 2.2143	+ 33	14	18.55	+ 3.991
σ Octantis . . .		5.6	18	47	39.590	+105.0290	— 89	15	49.46	4.122
σ Sagittarii . . .		2.3	18	48	37.834	+ 3.7215	— 26	25	45.26	4.146
50 Draconis . . .		5.6	18	49	49.330	— 1.9099	+ 75	18	27.31	4.400
51 Cephei (H.) .	S. P.	5.3	18	50	14.857	+29.8170	+ 92	47	7.93	+ 4.400

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1893.0. (January $0^{d}.0$—$0^{d}.593$, Washington.)

Name of Star.		Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
			h	m	s	s	°	′	″	″
* γ Lyræ		3.3	18	54	56.479	+ 2.2444	+ 32	32	34.76	+ 4.772
ζ Aquilæ		3.1	19	0	29.536	2.7569	+ 13	42	16.69	5.128
* ι Lyræ		5.2	19	3	29.049	2.1412	+ 35	55	57.42	5.493
* 25 Camelopardalis	S.P.	5.3	19	8	33.498	12.9414	+ 97	23	1.31	5.941
d Sagittarii		5.0	19	11	22.462	3.5120	− 19	8	34.60	6.126
δ Draconis		3.1	19	12	31.826	+ 0.0287	+ 67	28	23.92	+ 6.326
* θ Lyræ		4.4	19	12	39.187	+ 2.0790	+ 37	56	35.47	6.252
τ Draconis		4.5	19	17	36.666	− 1.1191	+ 73	9	24.17	6.770
Piazzi vii. 67	S.P.	5.7	19	19	44.879	+ 6.2956	+111	18	59.26	6.875
δ Aquilæ		3.5	19	20	6.204	3.0252	+ 2	54	6.11	6.944
* β Cygni		3.1	19	26	24.381	+ 2.4194	+ 27	44	6.29	+ 7.375
λ Ursæ Minoris		6.5	19	30	18.771	−65.8800	+ 88	58	24.08	7.708
κ Aquilæ		5.0	19	31	8.090	+ 3.2287	− 7	15	53.98	7.766
* β Sagittæ		4.5	19	36	14.602	2.6956	+ 17	13	41.53	8.147
γ Aquilæ		2.8	19	41	10.367	2.8522	+ 10	21	9.76	8.559
* δ Cygni		2.9	19	41	37.877	+ 1.8761	+ 44	52	10.64	+ 8.640
α Aquilæ (*Altair*)		0.9	19	45	33.770	2.9275	+ 8	35	9.24	9.284
* Groombr. 1374	S.P.	5.6	19	47	22.842	7.2793	+105	47	49.47	9.089
* ε Pavonis		4.1	19	48	12.328	+ 7.0137	− 73	11	28.86	9.120
ε Draconis		3.9	19	48	31.915	− 0.1806	+ 69	59	43.53	9.173
β Aquilæ		3.9	19	50	3.443	+ 2.9470	+ 6	8	22.76	+ 8.773
* γ Sagittæ		3.6	19	53	59.926	2.6678	+ 19	12	6.48	9.606
* c Sagittarii		4.5	19	56	4.750	3.6964	− 28	0	24.65	9.744
τ Aquilæ		5.7	19	58	54.829	2.9330	+ 6	58	34.10	9.951
3 Ursæ Majoris (H.)	S.P.	5.5	20	2	9.971	6.0447	+111	12	41.96	10.188
* θ Aquilæ		3.3	20	5	47.012	+ 3.0970	− 1	8	19.31	+ 10.470
* 31 Cygni		3.9	20	10	15.753	1.8894	+ 46	25	0.71	10.797
α^2 Capricorni		3.7	20	12	7.078	+ 3.3318	− 12	52	34.34	10.930
κ Cephei (*pr.*)		4.4	20	12	29.178	− 1.9290	+ 77	23	20.56	10.985
α Pavonis		2.1	20	17	11.329	+ 4.7820	− 57	4	38.30	11.209
γ Cygni		2.3	20	18	23.398	+ 2.1538	+ 39	54	51.22	+ 11.380
π Capricorni		5.1	20	21	11.830	3.4392	− 18	33	44.05	11.570
ε Delphini		4.0	20	28	6.093	+ 2.8671	+ 10	56	23.59	12.053
Groombridge 3241		6.5	20	30	27.997	− 0.2223	+ 72	10	9.00	12.220
* α Delphini		3.9	20	34	40.090	+ 2.7878	+ 15	32	4.93	12.532
* β Pavonis		3.4	20	35	18.867	+ 5.4699	− 66	35	13.07	+ 12.551
α Cygni		1.4	20	37	47.072	2.0445	+ 44	53	52.78	12.732
* ψ Capricorni		4.3	20	39	45.627	3.5602	− 25	39	18.45	12.711
* ε Cygni		2.6	20	41	52.922	2.4278	+ 33	34	10.09	13.349
μ Aquarii		4.8	20	46	52.974	+ 3.2395	− 9	23	4.77	13.301
12 Year Catalogue, 1879		5.3	20	52	25.984	− 2.5603	+ 80	9	2.88	+ 13.673
ν Cygni		4.1	20	53	11.037	+ 2.2343	+ 40	45	19.02	13.733
σ^2 Ursæ Majoris	S.P.	5.0	21	0	58.569	5.3501	+112	25	53.10	14.295
61^1 Cygni		5.4	21	2	6.012	2.6834	+ 38	13	23.74	17.542
ζ Cygni		3.3	21	8	22.894	2.5498	+ 29	47	17.00	14.621
* τ Cygni		3.8	21	10	31.210	+ 2.3936	+ 37	35	19.55	+ 15.271
α Cephei		2.6	21	16	1.566	1.4364	+ 62	7	55.99	15.179
1 Pegasi		4.3	21	17	8.249	2.7723	+ 19	20	48.44	15.250
* ζ Capricorni		3.8	21	20	33.528	3.4339	− 22	52	28.84	15.395
1 Draconis (H.)	S.P.	4.5	21	21	48.715	+ 8.9713	+ 98	12	4.48	+ 15.481

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1893.0. (January $0^{d}.0-0^{d}.593$, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
d Ursæ Majoris . S.P.	4.8	21 25 0.916	+ 5.3949	+109 41 59.39	+ 15.579
β Aquarii	2.9	21 25 55.585	3.1615	− 6 2 30.42	15.673
β Cephei (*pr.*)	3.4	21 27 16.685	0.7929	+ 70 5 27.35	15.759
ξ Aquarii	4.8	21 32 3.385	3.1976	− 8 20 2.15	15.982
* 74 Cygni	5.0	21 32 39.616	2.4017	+ 39 55 57.82	16.060
* λ¹ Octantis	5.4	21 34 27.564	+ 9.7486	− 83 12 37.99	+ 16.065
* ζ Chamæleontis . S.P.	5.2	21 37 1.671	− 1.5727	− 99 32 22.17	16.282
ε Pegasi	2.4	21 38 55.865	+ 2.9467	+ 9 23 4.35	16.366
11 Cephei	4.8	21 40 21.334	0.9002	+ 70 49 7.67	16.541
* π² Cygni	4.5	21 42 50.420	2.2135	+ 48 48 52.39	16.550
μ Capricorni	5.2	21 47 27.755	+ 3.2756	− 14 3 19.22	+ 16.789
* 16 Pegasi	5.1	21 48 11.604	2.7280	+ 25 25 18.40	16.827
79 Draconis	6.6	21 51 31.821	0.7275	+ 73 11 46.10	17.015
α Aquarii	3.0	22 0 17.296	3.0826	− 0 50 22.47	17.365
α Gruis	1.9	22 1 29.306	3.8044	− 47 28 43.94	17.258
* π Pegasi	4.3	22 5 14.116	+ 2.6604	+ 32 39 12.11	+ 17.587
32 Ursæ Majoris . S.P.	5.7	22 10 15.701	4.4167	+114 21 29.74	17.822
* υ Octantis	6.2	22 11 4.254	13.0546	− 86 30 38.44	17.918
θ Aquarii	4.4	22 11 11.258	3.1688	− 8 18 57.55	17.810
* γ Aquarii	4.0	22 16 7.764	3.1006	− 1 55 35.21	18.047
π Aquarii	4.6	22 19 48.772	+ 3.0646	+ 0 50 4.26	+ 18.162
* σ Aquarii	4.9	22 24 59.050	3.1779	− 11 13 31.33	18.325
9 Draconis . S.P.	5.0	22 26 0.037	5.2531	+103 44 10.09	18.406
* α Lacertæ	3.9	22 26 52.961	2.4628	+ 49 43 56.44	18.420
η Aquarii	4.2	22 29 51.483	3.0835	− 0 40 8.12	18.464
226 Cephei (B.)	5.7	22 30 23.766	+ 1.0762	+ 75 40 29.95	+ 18.531
* 10 Lacertæ	5.0	22 34 27.596	2.6870	+ 38 29 36.26	18.675
* β Octantis	4.4	22 35 5.899	6.4615	− 81 56 31.26	18.694
ζ Pegasi	3.5	22 36 7.539	2.9910	+ 10 16 22.35	18.712
* λ Pegasi	4.1	22 41 22.614	2.8855	+ 23 0 9.45	18.880
ι Cephei	3.6	22 45 52.168	+ 2.1226	+ 65 38 15.28	+ 18.880
λ Aquarii	3.8	22 47 1.969	3.1326	− 8 8 55.87	19.060
* Groombr. 1706 . S.P.	6.3	22 51 23.233	4.9585	+101 39 24.09	19.189
α Pis. Aus. (*Fomalhaut*)	1.3	22 51 44.255	3.3241	− 30 11 21.32	18.999
* ο Andromedæ	3.8	22 56 59.846	2.7505	+ 41 45 2.87	19.291
α Ursæ Majoris . S.P.	2.0	22 57 7.378	+ 3.7445	+117 40 17.11	+ 19.369
α Pegasi (*Markab*)	2.5	22 59 25.850	2.9851	+ 14 37 46.34	19.306
* φ Aquarii	4.3	23 8 46.885	3.1086	− 6 37 32.60	19.362
ο Cephei	5.1	23 14 14.001	2.4455	+ 67 31 34.24	19.672
* τ Pegasi	4.6	23 15 20.435	2.9639	+ 23 9 16.34	19.659
θ Piscium	4.3	23 22 32.405	+ 3.0412	+ 5 47 28.04	+ 19.729
λ Draconis . S.P.	4.0	23 25 2.855	3.6175	+110 4 42.38	19.841
* λ Andromedæ	3.8	23 32 19.634	2.9231	+ 45 52 41.40	19.474
ι Piscium	4.3	23 34 26.807	3.0842	+ 5 2 46.85	19.485
γ Cephei	3.5	23 34 57.216	2.4181	+ 77 2 6.20	20.077
* A¹ Aquarii	5.2	23 38 39.151	+ 3.1166	− 18 52 14.57	+ 19.961
* δ Sculptoris	4.6	23 43 21.174	3.1319	− 28 43 18.34	19.857
* γ¹ Octantis	5.2	23 45 48.414	3.6781	− 82 36 48.61	19.994
Groombridge 4163	6.6	23 49 37.811	2.8684	+ 73 48 53.44	20.023
ω Piscium	4.2	23 53 49.007	3.0786	+ 6 16 15.22	19.931
* 33 Piscium	4.7	23 59 51.524	+ 3.0708	− 6 18 21.70	+ 20.148

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Jan.	h m 1 18	+88° 44′	Jan.	h m 6 50	+87° 12′	Jan.	h m 18 6	+86° 36′	Jan.	h m 19 29	+88° 58′
	s	″		s	″		s	″		s	″
0.3	88.47	34.1	0.5	39.58	58.7	0.9	29.67	33.5	0.0	6.73	20.7
1.3	87.59	34.2	1.5	39.75	59.0	1.9	29.64	33.1	1.0	6.11	20.4
2.3	86.65	34.4	2.5	39.92	59.4	2.9	29.62	32.8	2.0	5.52	20.1
3.3	85.65	34.5	3.5	40.07	59.7	3.9	29.62	32.4	3.0	4.95	19.8
4.3	84.60	34.6	4.5	40.20	60.1	4.9	29.64	32.0	4.0	4.43	19.5
5.3	83.51	34.8	5.5	40.29	60.5	5.9	29.68	31.6	5.0	3.98	19.1
6.3	82.43	34.8	6.5	40.34	60.8	6.9	29.75	31.2	6.0	3.61	18.7
7.3	81.36	34.9	7.5	40.34	61.2	7.9	29.84	30.9	7.0	3.34	18.4
8.3	80.30	34.9	8.5	40.35	61.5	8.9	29.92	30.6	8.0	3.13	18.0
9.3	79.32	34.9	9.5	40.34	61.8	9.9	30.02	30.3	9.0	2.97	17.7
10.2	78.37	35.0	10.5	40.33	62.1	10.9	30.12	30.0	10.0	2.84	17.4
11.2	77.48	35.0	11.5	40.33	62.4	11.9	30.19	29.7	11.0	2.71	17.1
12.2	76.60	35.0	12.5	40.35	62.7	12.9	30.27	29.4	12.0	2.54	16.8
13.2	75.71	35.1	13.5	40.37	63.0	13.9	30.33	29.1	13.0	2.35	16.5
14.2	74.82	35.1	14.5	40.41	63.3	14.9	30.39	28.7	13.9	2.14	16.2
15.2	73.85	35.1	15.5	40.44	63.6	15.9	30.47	28.4	14.9	1.89	15.9
16.2	72.85	35.2	16.5	40.47	63.9	16.9	30.56	28.1	15.9	1.63	15.6
17.2	71.79	35.2	17.5	40.48	64.3	17.9	30.66	27.7	16.9	1.42	15.2
18.2	70.69	35.3	18.5	40.46	64.6	18.9	30.78	27.3	17.9	1.25	14.9
19.2	69.58	35.3	19.5	40.42	65.0	19.9	30.93	27.0	18.9	1.16	14.5
20.2	68.47	35.3	20.4	40.34	65.3	20.9	31.09	26.6	19.9	1.14	14.1
21.2	67.41	35.2	21.4	40.23	65.7	21.9	31.27	26.3	20.9	1.21	13.8
22.2	66.40	35.2	22.4	40.10	66.0	22.9	31.44	26.0	21.9	1.33	13.4
23.2	65.43	35.1	23.4	39.97	66.3	23.9	31.63	25.7	22.9	1.50	13.1
24.2	64.54	35.0	24.4	39.86	66.6	24.9	31.79	25.5	23.9	1.66	12.8
25.2	63.67	35.0	25.4	39.75	66.8	25.9	31.94	25.2	24.9	1.81	12.5
26.2	62.82	35.0	26.4	39.66	67.1	26.9	32.09	25.0	25.9	1.93	12.2
27.2	61.98	34.9	27.4	39.58	67.4	27.9	32.24	24.7	26.9	2.03	11.9
28.2	61.10	34.9	28.4	39.52	67.7	28.9	32.39	24.4	27.9	2.09	11.6
29.2	60.20	34.9	29.4	39.44	68.0	29.9	32.54	24.1	28.9	2.13	11.3
30.2	59.22	34.8	30.4	39.34	68.3	30.9	32.71	23.8	29.9	2.18	11.0
31.2	58.21	34.8	31.4	39.23	68.6	31.9	32.90	23.5	30.9	2.29	10.7
32.2	57.17	34.7	32.4	39.09	68.9	32.9	33.11	23.2	31.9	2.47	10.3

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
Feb.	1 18	+88 44	Feb.	6 50	+87 13	Feb.	18 6	+86 36	Feb.	19 29	+88 58
	s	″		s	″		s	″		s	″
1.2	57.17	34.7	1.4	39.09	8.9	1.9	33.11	23.2	1.9	2.74	10.0
2.2	56.12	34.6	2.4	38.91	9.3	2.9	33.35	22.9	2.9	3.07	9.6
3.2	55.09	34.5	3.4	38.71	9.6	3.9	33.60	22.6	3.9	3.49	9.3
4.2	54.10	34.4	4.4	38.47	9.9	4.9	33.87	22.3	4.9	3.97	8.9
5.2	53.15	34.3	5.4	38.21	10.2	5.9	34.14	22.1	5.9	4.50	8.6
6.2	52.27	34.1	6.4	37.96	10.4	6.9	34.41	21.8	6.9	5.02	8.3
7.2	51.45	33.9	7.4	37.72	10.7	7.9	34.67	21.6	7.9	5.54	8.1
8.2	50.66	33.8	8.4	37.49	10.9	8.9	34.91	21.4	8.9	6.01	7.8
9.2	49.89	33.6	9.4	37.28	11.2	9.9	35.16	21.2	9.9	6.45	7.5
10.2	49.11	33.5	10.4	37.09	11.4	10.9	35.38	21.0	10.9	6.87	7.3
11.2	48.32	33.4	11.4	36.88	11.6	11.9	35.62	20.8	11.9	7.27	7.0
12.2	47.47	33.3	12.4	36.68	11.9	12.9	35.87	20.5	12.9	7.66	6.7
13.2	46.58	33.2	13.4	36.47	12.2	13.9	36.12	20.3	13.9	8.11	6.4
14.2	45.66	33.0	14.4	36.24	12.5	14.9	36.40	20.0	14.9	8.60	6.1
15.1	44.73	32.9	15.4	35.98	12.7	15.9	36.69	19.8	15.9	9.19	5.8
16.1	43.79	32.7	16.4	35.70	13.0	16.8	37.00	19.5	16.9	9.84	5.4
17.1	42.90	32.5	17.4	35.37	13.3	17.8	37.33	19.3	17.9	10.56	5.1
18.1	42.05	32.3	18.4	35.04	13.5	18.8	37.66	19.1	18.9	11.32	4.9
19.1	41.27	32.1	19.4	34.69	13.7	19.8	37.98	19.0	19.9	12.11	4.6
20.1	40.55	31.8	20.4	34.35	13.9	20.8	38.31	18.8	20.9	12.88	4.4
21.1	39.91	31.6	21.4	34.04	14.1	21.8	38.60	18.7	21.9	13.63	4.1
22.1	39.28	31.4	22.4	33.75	14.3	22.8	38.89	18.6	22.9	14.32	3.9
23.1	38.69	31.2	23.4	33.47	14.5	23.8	39.17	18.4	23.9	14.99	3.7
24.1	38.09	31.0	24.3	33.20	14.7	24.8	39.45	18.3	24.9	15.63	3.5
25.1	37.45	30.9	25.3	32.93	14.8	25.9	39.72	18.1	25.9	16.26	3.3
26.1	36.76	30.7	26.3	32.66	15.0	26.9	40.02	17.9	26.9	16.91	3.0
27.1	36.05	30.5	27.3	32.36	15.3	27.9	40.31	17.8	27.9	17.61	2.8
28.1	35.30	30.3	28.3	32.05	15.5	28.9	40.65	17.6	28.9	18.39	2.5
29.1	34.53	30.1	29.3	31.70	15.7	29.9	41.00	17.4	29.9	19.25	2.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Mar.	h m 1 18	+88° 44′	Mar.	h m 6 50	+87° 13′	Mar.	h m 18 6	+86° 36′	Mar.	h m 19 29	+88° 57′
	s	″		s	″		s	″		s	″
1.1	34.53	30.1	1.3	31.70	15.7	1.8	41.00	17.4	1.9	19.25	62.2
2.1	33.78	29.8	2.3	31.31	15.9	2.8	41.36	17.3	2.9	20.19	62.0
3.1	33.08	29.5	3.3	30.89	16.1	3.8	41.74	17.2	3.9	21.17	61.7
4.1	32.44	29.3	4.3	30.49	16.3	4.8	42.13	17.1	4.9	22.21	61.5
5.1	31.87	29.0	5.3	30.06	16.4	5.8	42.49	17.0	5.9	23.26	61.4
6.1	31.36	28.7	6.3	29.64	16.5	6.8	42.86	16.9	6.9	24.27	61.2
7.1	30.91	28.4	7.3	29.24	16.6	7.8	43.21	16.9	7.9	25.26	61.0
8.1	30.49	28.1	8.3	28.86	16.7	8.8	43.54	16.8	8.9	26.21	60.9
9.1	30.08	27.9	9.3	28.51	16.8	9.8	43.88	16.7	9.8	27.11	60.7
10.1	29.67	27.6	10.3	28.16	17.0	10.8	44.20	16.7	10.8	27.98	60.6
11.1	29.22	27.4	11.3	27.81	17.1	11.8	44.52	16.6	11.8	28.85	60.4
12.1	28.73	27.2	12.3	27.47	17.2	12.8	44.84	16.5	12.8	29.71	60.3
13.1	28.22	26.9	13.3	27.11	17.4	13.8	45.19	16.4	13.8	30.65	60.1
14.1	27.68	26.7	14.3	26.73	17.5	14.8	45.57	16.3	14.8	31.63	59.9
15.1	27.15	26.4	15.3	26.32	17.6	15.8	45.95	16.3	15.8	32.67	59.7
16.1	26.64	26.1	16.9	25.89	17.8	16.8	46.33	16.2	16.8	33.80	59.5
17.1	26.20	25.8	17.3	25.45	17.9	17.8	46.71	16.2	17.8	34.94	59.3
18.1	25.81	25.4	18.3	24.99	18.0	18.8	47.09	16.2	18.8	36.10	59.2
19.1	25.50	25.1	19.3	24.54	18.0	19.8	47.47	16.2	19.8	37.26	59.1
20.1	25.27	24.8	20.3	24.11	18.1	20.8	47.82	16.2	20.8	38.40	59.0
21.1	25.08	24.5	21.3	23.69	18.1	21.8	48.15	16.2	21.8	39.48	59.0
22.0	24.93	24.2	22.3	23.28	18.1	22.7	48.48	16.3	22.8	40.50	58.9
23.0	24.77	23.9	23.3	22.91	18.1	23.7	48.81	16.3	23.8	41.47	58.8
24.0	24.60	23.7	24.3	22.56	18.1	24.7	49.12	16.3	24.8	42.41	58.7
25.0	24.41	23.4	25.3	22.20	18.2	25.7	49.43	16.3	25.8	43.36	58.6
26.0	24.15	23.2	26.3	21.85	18.2	26.7	49.77	16.3	26.8	44.33	58.5
27.0	23.89	22.9	27.3	21.46	18.3	27.7	50.10	16.3	27.8	45.37	58.4
28.0	23.61	22.6	28.3	21.06	18.4	28.7	50.45	16.3	28.8	46.48	58.3
29.0	23.33	22.3	29.3	20.63	18.4	29.7	50.84	16.3	29.8	47.65	58.2
30.0	23.08	22.0	30.3	20.18	18.5	30.7	51.22	16.4	30.8	48.87	58.1
31.0	22.90	21.6	31.3	10.71	18.5	31.7	51.60	16.4	31.8	50.14	58.1
32.0	22.78	21.3	32.2	19.23	18.5	32.7	52.00	16.5	32.8	51.40	58.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Apr.	h m 1 18	+88° 44′	Apr.	h m 6 50	+87° 13′	Apr.	h m 18 6	+86° 36′	Apr.	h m 19 29	+88° 57′
	s	″		s	″		s	″		s	″
1.0	22.78	21.3	1.2	19.23	18.5	1.7	52.00	16.5	1.8	51.40	58.0
2.0	22.74	21.0	2.2	18.77	18.4	2.7	52.35	16.6	2.8	52.67	58.0
3.0	22.76	20.6	3.2	18.32	18.4	3.7	52.71	16.8	3.8	53.88	58.0
4.0	22.82	20.3	4.2	17.90	18.3	4.7	53.04	16.9	4.8	55.04	58.0
5.0	22.91	20.0	5.2	17.50	18.3	5.7	53.35	17.0	5.8	56.14	58.1
6.0	22.99	19.7	6.2	17.13	18.2	6.7	53.67	17.1	6.8	57.20	58.1
7.0	23.05	19.4	7.2	16.76	18.2	7.7	53.97	17.2	7.8	58.22	58.1
8.0	23.08	19.2	8.2	16.40	18.1	8.7	54.28	17.3	8.8	59.25	58.0
9.0	23.06	18.9	9.2	16.04	18.1	9.7	54.59	17.4	9.8	60.29	58.0
10.0	23.04	18.6	10.2	15.65	18.1	10.7	54.93	17.4	10.8	61.37	58.0
10.9	23.01	18.3	11.2	15.24	18.1	11.7	55.27	17.5	11.8	62.51	58.0
11.9	22.99	18.0	12.2	14.81	18.0	12.7	55.61	17.6	12.8	63.70	58.0
12.9	23.01	17.7	13.2	14.38	18.0	13.7	55.96	17.7	13.8	64.91	58.0
13.9	23.12	17.4	14.2	13.93	17.9	14.7	56.29	17.9	14.8	66.15	58.0
14.9	23.26	17.0	15.2	13.49	17.8	15.7	56.63	18.1	15.8	67.39	58.0
15.9	23.51	16.7	16.2	13.06	17.7	16.7	56.96	18.3	16.8	68.58	58.1
16.9	23.81	16.4	17.2	12.67	17.6	17.7	57.25	18.5	17.7	69.70	58.2
17.9	24.14	16.1	18.2	12.29	17.4	18.7	57.52	18.7	18.7	70.78	58.3
18.9	24.49	15.8	19.2	11.95	17.3	19.7	57.77	18.8	19.7	71.79	58.4
19.9	24.84	15.6	20.2	11.64	17.1	20.7	58.03	19.0	20.7	72.74	58.5
20.9	25.16	15.3	21.2	11.32	17.0	21.7	58.26	19.2	21.7	73.69	58.6
21.9	25.43	15.1	22.2	11.02	16.9	22.7	58.51	19.3	22.7	74.64	58.6
22.9	25.69	14.8	23.2	10.70	16.8	23.7	58.77	19.5	23.7	75.60	58.7
23.9	25.90	14.6	24.2	10.36	16.7	24.7	59.05	19.6	24.7	76.64	58.8
24.9	26.11	14.3	25.2	10.00	16.6	25.7	59.33	19.8	25.7	77.72	58.8
25.9	26.35	14.0	26.2	9.61	16.5	26.7	59.62	20.0	26.7	78.86	58.9
26.9	26.64	13.7	27.2	9.21	16.4	27.7	59.92	20.2	27.7	80.03	59.0
27.9	26.97	13.4	28.2	8.82	16.2	28.7	60.22	20.4	28.7	81.21	59.1
28.9	27.41	13.1	29.2	8.43	16.1	29.6	60.50	20.7	29.7	82.38	59.2
29.9	27.89	12.8	30.2	8.06	15.9	30.6	60.76	20.9	30.7	83.50	59.4
30.9	28.43	12.5	31.2	7.71	15.7	31.6	61.00	21.2	31.7	84.55	59.6
31.9	28.99	12.2									

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
May	1 18	+88 44	May	6 50	+87 13	May	18 7	+86 36	May	19 30	+88 57
	s	″		s	″		s	″		s	″
1.9	28.99	12.2	1.2	7.71	15.7	1.6	1.00	21.2	1.7	24.55	59.5
2.9	29.54	12.0	2.2	7.39	15.4	2.6	1.22	21.5	2.7	25.54	59.7
3.9	30.11	11.7	3.2	7.11	15.2	3.6	1.44	21.7	3.7	26.48	59.9
4.9	30.62	11.5	4.2	6.84	15.0	4.6	1.62	21.9	4.6	27.35	60.1
5.9	31.10	11.3	5.2	6.58	14.8	5.6	1.83	22.2	5.6	28.19	60.2
6.9	31.54	11.1	6.2	6.33	14.7	6.6	2.02	22.4	6.6	29.03	60.3
7.9	31.97	10.8	7.1	6.06	14.5	7.6	2.24	22.6	7.6	29.93	60.5
8.9	32.41	10.6	8.1	5.77	14.4	8.6	2.45	22.8	8.6	30.84	60.6
9.9	32.87	10.3	9.1	5.47	14.2	9.6	2.68	23.0	9.6	31.80	60.8
10.9	33.40	10.1	10.1	5.15	14.0	10.6	2.91	23.3	10.6	32.80	60.9
11.9	33.98	9.8	11.1	4.82	13.8	11.6	3.12	23.5	11.6	33.81	61.1
12.9	34.64	9.6	12.1	4.51	13.6	12.6	3.34	23.8	12.6	34.82	61.3
13.9	35.36	9.3	13.1	4.21	13.4	13.6	3.54	24.1	13.6	35.77	61.5
14.9	36.12	9.1	14.1	3.93	13.1	14.6	3.71	24.4	14.6	36.66	61.7
15.9	36.90	8.9	15.1	3.68	12.8	15.6	3.85	24.7	15.6	37.50	62.0
16.9	37.67	8.7	16.1	3.46	12.5	16.6	3.98	25.0	16.6	38.25	62.2
17.9	38.42	8.6	17.1	3.26	12.3	17.6	4.09	25.3	17.6	38.94	62.4
18.9	39.12	8.4	18.1	3.08	12.0	18.6	4.20	25.6	18.6	39.58	62.7
19.9	39.79	8.3	19.1	2.92	11.8	19.6	4.31	25.9	19.6	40.22	62.9
20.9	40.42	8.1	20.1	2.75	11.6	20.6	4.43	26.1	20.6	40.87	63.1
21.9	41.04	7.9	21.1	2.56	11.4	21.6	4.55	26.4	21.6	41.55	63.3
22.9	41.66	7.7	22.1	2.37	11.1	22.6	4.68	26.6	22.6	42.28	63.5
23.9	42.31	7.5	23.1	2.16	10.9	23.6	4.83	26.9	23.6	43.07	63.7
24.9	43.02	7.3	24.1	1.92	10.7	24.6	4.98	27.2	24.6	43.88	63.9
25.9	43.79	7.1	25.1	1.68	10.4	25.6	5.13	27.5	25.6	44.71	64.1
26.9	44.61	6.9	26.1	1.44	10.2	26.6	5.27	27.8	26.6	45.51	64.4
27.9	45.50	6.8	27.1	1.22	9.9	27.6	5.39	28.1	27.6	46.29	64.7
28.9	46.41	6.6	28.1	1.04	9.6	28.6	5.49	28.5	28.6	46.99	65.0
29.9	47.33	6.5	29.1	0.87	9.3	29.6	5.55	28.8	29.6	47.62	65.3
30.9	48.24	6.3	30.1	0.75	8.9	30.6	5.61	29.1	30.6	48.18	65.6
31.9	49.10	6.2	31.1	0.65	8.6	31.6	5.65	29.4	31.6	48.68	65.8
32.9	49.94	6.1	32.1	0.56	8.3	32.6	5.68	29.8	32.6	49.13	66.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
June	h m 1 18	+88° 44′	June	h m 6 49	+87° 12′	June	h m 18 7	+86° 36′	June	h m 19 30	+88° 58′
	s	″		s	″		s	″		s	″
1.9	49.94	6.1	1.1	60.56	68.3	1.6	5.68	29.8	1.6	49.13	6.1
2.9	50.72	6.0	2.1	60.48	68.1	2.6	5.72	30.0	2.6	49.57	6.4
3.8	51.46	5.9	3.1	60.41	67.8	3.5	5.75	30.3	3.6	50.00	6.6
4.8	52.20	5.8	4.1	60.30	67.6	4.5	5.80	30.6	4.6	50.48	6.8
5.8	52.96	5.7	5.1	60.20	67.3	5.5	5.86	30.9	5.6	50.98	7.1
6.8	53.76	5.5	6.1	60.07	67.1	6.5	5.91	31.2	6.6	51.53	7.3
7.8	54.62	5.4	7.1	59.95	66.8	7.5	5.96	31.5	7.6	52.09	7.6
8.8	55.53	5.3	8.1	59.82	66.5	8.5	6.01	31.8	8.6	52.66	7.9
9.8	56.51	5.2	9.1	59.70	66.2	9.5	6.05	32.1	9.6	53.19	8.2
10.8	57.52	5.1	10.1	59.61	65.8	10.5	6.06	32.5	10.6	53.65	8.5
11.8	58.57	5.0	11.1	59.55	65.5	11.5	6.05	32.9	11.6	54.03	8.9
12.8	59.60	5.0	12.1	59.53	65.1	12.5	6.01	33.2	12.6	54.35	9.2
13.8	60.62	4.9	13.0	59.53	64.8	13.5	5.96	33.6	13.6	54.60	9.5
14.8	61.60	4.9	14.0	59.55	64.5	14.5	5.91	33.9	14.6	54.78	9.9
15.8	62.52	4.9	15.0	59.59	64.2	15.5	5.84	34.2	15.6	54.92	10.2
16.8	63.39	4.8	16.0	59.63	63.9	16.5	5.77	34.5	16.6	55.07	10.5
17.8	64.25	4.8	17.0	59.66	63.6	17.5	5.73	34.7	17.6	55.24	10.7
18.8	65.08	4.8	18.0	59.67	63.4	18.5	5.68	35.0	18.6	55.46	11.0
19.8	65.93	4.7	19.0	50.67	63.1	19.5	5.65	35.3	19.6	55.71	11.3
20.8	66.83	4.6	20.0	59.64	62.8	20.5	5.62	35.6	20.6	56.00	11.6
21.8	67.77	4.6	21.0	59.60	62.5	21.5	5.60	35.9	21.6	56.31	11.9
22.8	68.77	4.5	22.0	59.58	62.2	22.5	5.55	36.3	22.6	56.61	12.2
23.8	69.83	4.5	23.0	59.56	61.9	23.5	5.50	36.6	23.6	56.87	12.5
24.8	70.90	4.4	24.0	59.57	61.5	24.5	5.48	37.0	24.6	57.09	12.9
25.8	72.00	4.4	25.0	59.60	61.2	25.5	5.34	37.3	25.6	57.22	13.2
26.8	73.08	4.4	26.0	59.67	60.8	26.5	5.21	37.7	26.6	57.27	13.6
27.8	74.13	4.5	27.0	59.77	60.5	27.5	5.08	38.0	27.6	57.26	14.0
28.8	75.13	4.5	28.0	59.89	60.2	28.5	4.95	38.3	28.6	57.20	14.3
29.8	76.06	4.6	29.0	60.03	59.9	29.5	4.81	38.6	29.5	57.10	14.6
30.8	76.96	4.6	30.0	60.16	59.6	30.5	4.67	38.9	30.5	57.00	14.9
31.8	77.84	4.7	31.0	60.28	59.3	31.5	4.53	39.1	31.5	56.92	15.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
July	1 19	+88 44	July	6 50	+87 12	July	18 6	+86 36	July	19 30	+88 58
	s	″		s	″		s	″		s	″
1.8	17.84	4.7	1.0	0.28	59.3	1.5	64.53	39.1	1.5	56.93	15.2
2.8	18.71	4.7	2.0	0.38	59.0	2.5	64.41	39.4	2.5	56.88	15.5
3.8	19.60	4.7	3.0	0.48	58.7	3.5	64.30	39.7	3.5	56.86	15.8
4.8	20.53	4.7	3.9	0.56	58.4	4.5	64.18	40.0	4.5	56.89	16.1
5.8	21.54	4.8	4.9	0.64	58.1	5.5	64.07	40.3	5.5	56.90	16.4
6.8	22.59	4.8	5.9	0.72	57.8	6.5	63.93	40.6	6.5	56.89	16.8
7.8	23.67	4.8	6.9	0.83	57.5	7.5	63.79	40.9	7.5	56.85	17.1
8.8	24.79	4.9	7.9	0.97	57.1	8.5	63.62	41.3	8.5	56.72	17.5
9.8	25.90	5.0	8.9	1.14	56.8	9.5	63.41	41.6	9.5	56.51	17.9
10.7	27.01	5.1	9.9	1.34	56.4	10.5	63.20	41.9	10.5	56.20	18.2
11.7	28.07	5.2	10.9	1.56	56.1	11.5	62.96	42.3	11.5	55.86	18.6
12.7	29.06	5.3	11.9	1.81	55.8	12.4	62.74	42.5	12.5	55.47	18.9
13.7	30.00	5.5	12.9	2.04	55.5	13.4	62.50	42.8	13.5	55.05	19.3
14.7	30.90	5.6	13.9	2.29	55.2	14.4	62.27	43.0	14.5	54.65	19.6
15.7	31.77	5.7	14.9	2.51	55.0	15.4	62.05	43.3	15.5	54.28	19.8
16.7	32.65	5.8	15.9	2.72	54.7	16.4	61.85	43.5	16.5	53.97	20.1
17.7	33.54	5.9	16.9	2.91	54.4	17.4	61.65	43.8	17.5	53.69	20.4
18.7	34.49	6.0	17.9	3.08	54.2	18.4	61.46	44.0	18.5	53.44	20.7
19.7	35.47	6.1	18.9	3.25	53.9	19.4	61.26	44.3	19.5	53.20	21.1
20.7	36.50	6.2	19.9	3.42	53.6	20.4	61.05	44.6	20.5	52.93	21.4
21.7	37.56	6.3	20.9	3.62	53.2	21.4	60.83	44.9	21.5	52.62	21.8
22.7	38.64	6.4	21.9	3.86	52.9	22.4	60.59	45.2	22.5	52.23	22.1
23.7	39.71	6.6	22.9	4.12	52.6	23.4	60.31	45.5	23.5	51.76	22.5
24.7	40.76	6.7	23.9	4.41	52.3	24.4	60.04	45.8	24.5	51.24	22.8
25.7	41.74	6.9	24.9	4.72	52.0	25.4	59.74	46.1	25.5	50.64	23.2
26.7	42.68	7.1	25.9	5.04	51.7	26.4	59.44	46.3	26.5	50.01	23.5
27.7	43.54	7.3	26.9	5.36	51.4	27.4	59.15	46.5	27.5	49.36	23.8
28.7	44.36	7.5	27.9	5.69	51.2	28.4	58.86	46.7	28.5	48.73	24.1
29.7	45.18	7.7	28.9	5.98	50.9	29.4	58.59	47.0	29.5	48.13	24.4
30.7	46.01	7.9	29.9	6.27	50.7	30.4	58.33	47.2	30.5	47.55	24.6
31.7	46.85	8.0	30.9	6.56	50.4	31.4	58.06	47.4	31.5	47.02	24.9
32.7	47.74	8.2	31.9	6.82	50.2	32.4	57.79	47.6	32.5	46.51	25.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Aug.	h m 1 19	+88° 44′	Aug.	h m 6 50	+87° 12′	Aug.	h m 18 6	+86° 36′	Aug.	h m 19 30	+88° 58′
	s	″		s	″		s	″		s	″
1.7	47.74	8.2	1.9	7.09	49.9	1.4	57.79	47.6	1.5	46.51	25.2
2.7	48.70	8.3	2.9	7.37	49.6	2.4	57.52	47.8	2.4	45.97	25.5
3.7	49.69	8.5	3.9	7.69	49.3	3.4	57.23	48.1	3.4	45.41	25.9
4.7	50.69	8.7	4.9	8.02	49.0	4.4	56.93	48.4	4.4	44.78	26.2
5.7	51.72	8.9	5.9	8.39	48.7	5.4	56.60	48.6	5.4	44.06	26.6
6.7	52.72	9.1	6.9	8.79	48.5	6.4	56.24	48.9	6.4	43.28	26.9
7.7	53.69	9.4	7.9	9.21	48.2	7.4	55.88	49.1	7.4	42.43	27.2
8.7	54.60	9.7	8.9	9.63	47.9	8.4	55.50	49.3	8.4	41.51	27.5
9.7	55.43	9.9	9.9	10.06	47.7	9.4	55.14	49.5	9.4	40.59	27.8
10.7	56.22	10.2	10.9	10.47	47.5	10.4	54.77	49.7	10.4	39.65	28.1
11.7	56.97	10.4	11.9	10.86	47.3	11.4	54.42	49.9	11.4	38.77	28.4
12.7	57.71	10.7	12.9	11.22	47.1	12.4	54.08	50.0	12.4	37.92	28.6
13.7	58.44	10.9	13.9	11.57	46.9	13.4	53.76	50.2	13.4	37.13	28.9
14.7	59.21	11.1	14.9	11.91	46.7	14.4	53.44	50.3	14.4	36.36	29.1
15.6	60.02	11.4	15.9	12.25	46.4	15.4	53.11	50.5	15.4	35.62	29.4
16.6	60.88	11.6	16.9	12.60	46.2	16.3	52.80	50.7	16.4	34.87	29.7
17.6	61.77	11.8	17.9	12.98	45.9	17.3	52.45	50.9	17.4	34.08	30.0
18.6	62.68	12.1	18.9	13.38	45.6	18.3	52.09	51.1	18.4	33.23	30.3
19.6	63.58	12.3	19.9	13.81	45.4	19.3	51.72	51.3	19.4	32.31	30.6
20.6	64.47	12.6	20.9	14.27	45.2	20.3	51.32	51.5	20.4	31.32	30.9
21.6	65.28	12.9	21.9	14.74	44.9	21.3	50.92	51.7	21.4	30.26	31.2
22.6	66.04	13.2	22.9	15.22	44.7	22.3	50.51	51.9	22.4	29.17	31.5
23.6	66.74	13.5	23.9	15.70	44.6	23.3	50.10	52.0	23.4	28.06	31.8
24.6	67.39	13.8	24.8	16.15	44.4	24.3	49.70	52.1	24.4	26.95	32.0
25.6	68.00	14.1	25.8	16.60	44.2	25.3	49.30	52.2	25.4	25.86	32.2
26.6	68.61	14.4	26.8	17.02	44.1	26.3	48.94	52.3	26.4	24.83	32.4
27.6	69.24	14.7	27.8	17.43	43.9	27.3	48.57	52.4	27.4	23.82	32.6
28.6	69.89	15.0	28.8	17.85	43.8	28.3	48.21	52.5	28.4	22.86	32.8
29.6	70.58	15.3	29.8	18.27	43.6	29.3	47.84	52.7	29.4	21.88	33.1
30.6	71.34	15.5	30.8	18.71	43.3	30.3	47.45	52.8	30.4	20.90	33.3
31.6	72.11	15.8	31.8	19.17	43.1	31.3	47.06	52.9	31.4	19.87	33.6
32.6	72.89	16.1	32.8	19.66	42.9	32.3	46.66	53.1	32.4	18.75	33.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Sept.	h m 1 20	° ′ +88 44	Sept.	h m 6 50	° ′ +87 12	Sept.	h m 18 6	° ′ +86 36	Sept.	h m 19 29	° ′ +88 58
	s	″		s	″		s	″		s	″
1.6	12.89	16.1	1.8	19.66	42.9	1.3	46.66	53.1	1.4	78.75	33.9
2.6	13.66	16.5	2.8	20.17	42.7	2.3	46.22	53.2	2.4	77.58	34.1
3.6	14.39	16.9	3.8	20.71	42.5	3.3	45.77	53.4	3.4	76.33	34.4
4.6	15.07	17.2	4.8	21.26	42.4	4.3	45.32	53.5	4.4	75.03	34.6
5.6	15.69	17.6	5.8	21.81	42.2	5.3	44.86	53.6	5.4	73.71	34.9
6.6	16.24	17.9	6.8	22.34	42.1	6.3	44.40	53.6	6.4	72.37	35.1
7.6	16.74	18.3	7.8	22.85	42.0	7.3	43.98	53.7	7.4	71.06	35.2
8.6	17.20	18.6	8.8	23.35	41.9	8.3	43.57	53.7	8.3	69.80	35.4
9.6	17.67	19.0	9.8	23.82	41.8	9.3	43.17	53.7	9.3	68.60	35.6
10.6	18.15	19.3	10.8	24.27	41.7	10.3	42.77	53.8	10.3	67.45	35.7
11.6	18.66	19.6	11.8	24.71	41.6	11.3	42.39	53.8	11.3	66.33	35.9
12.6	19.22	19.9	12.8	25.17	41.4	12.3	42.00	53.9	12.3	65.21	36.1
13.6	19.82	20.2	13.8	25.64	41.3	13.3	41.61	54.0	13.3	64.07	36.3
14.6	20.42	20.5	14.8	26.14	41.1	14.3	41.20	54.1	14.3	62.90	36.5
15.6	21.04	20.9	15.8	26.65	41.0	15.3	40.76	54.2	15.3	61.65	36.7
16.6	21.64	21.3	16.8	27.20	40.8	16.3	40.30	54.2	16.3	60.34	36.9
17.6	22.18	21.6	17.8	27.76	40.7	17.3	39.84	54.3	17.3	58.98	37.1
18.6	22.66	22.0	18.8	28.32	40.6	18.3	39.38	54.3	18.3	57.56	37.3
19.6	23.07	22.4	19.8	28.89	40.5	19.3	38.92	54.3	19.3	56.13	37.5
20.6	23.41	22.8	20.8	29.44	40.5	20.3	38.47	54.3	20.3	54.68	37.6
21.5	23.71	23.2	21.8	29.97	40.4	21.3	38.03	54.3	21.3	53.28	37.8
22.5	24.00	23.6	22.8	30.49	40.4	22.2	37.61	54.3	22.3	51.93	37.9
23.5	24.28	23.9	23.8	30.98	40.3	23.2	37.19	54.2	23.3	50.62	38.0
24.5	24.59	24.2	24.8	31.46	40.3	24.2	36.79	54.2	24.3	49.34	38.1
25.5	24.94	24.6	25.8	31.95	40.2	25.2	36.38	54.2	25.3	48.10	38.2
26.5	25.34	24.9	26.8	32.44	40.1	26.2	35.97	54.2	26.3	46.85	38.3
27.5	25.77	25.3	27.8	32.95	40.0	27.2	35.55	54.3	27.3	45.56	38.5
28.5	26.22	25.7	28.8	33.50	39.9	28.2	35.11	54.3	28.3	44.23	38.6
29.5	26.66	26.0	29.8	34.07	39.8	29.2	34.65	54.3	29.3	42.81	38.8
30.5	27.06	26.4	30.8	34.65	39.8	30.2	34.18	54.3	30.3	41.35	38.9
31.5	27.42	26.9	31.7	35.25	39.7	31.2	33.71	54.3	31.3	39.84	39.1

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
Oct.	1 20	+88 44	Oct.	6 50	+87 12	Oct.	18 6	+86 36	Oct.	19 28	+88 58
	s	″		s	″		s	″		s	″
1.5	27.42	26.9	1.7	35.25	39.7	1.2	33.71	54.3	1.3	99.84	39.1
2.5	27.71	27.3	2.7	35.86	39.7	2.2	33.23	54.2	2.3	98.28	39.2
3.5	27.93	27.7	3.7	36.44	39.7	3.2	32.76	54.2	3.3	96.70	39.3
4.5	28.09	28.1	4.7	37.01	39.7	4.2	32.31	54.1	4.3	95.16	39.3
5.5	28.21	28.5	5.7	37.57	39.7	5.2	31.87	54.0	5.3	93.66	39.4
6.5	28.30	28.9	6.7	38.10	39.7	6.2	31.44	53.9	6.3	92.23	39.4
7.5	28.40	29.3	7.7	38.60	39.7	7.2	31.04	53.8	7.3	90.86	39.5
8.5	28.53	29.6	8.7	39.10	39.7	8.2	30.65	53.7	8.3	89.53	39.5
9.5	28.69	30.0	9.7	39.58	39.7	9.2	30.25	53.7	9.3	88.23	39.6
10.5	28.89	30.4	10.7	40.08	39.7	10.2	29.87	53.6	10.3	86.92	39.7
11.5	29.12	30.7	11.7	40.60	39.7	11.2	29.46	53.5	11.3	85.59	39.7
12.5	29.35	31.1	12.7	41.14	39.6	12.2	29.03	53.5	12.3	84.21	39.8
13.5	29.56	31.5	13.7	41.70	39.6	13.2	28.60	53.4	13.3	82.78	39.9
14.5	29.73	31.9	14.7	42.28	39.6	14.2	28.17	53.4	14.3	81.29	40.0
15.5	29.85	32.3	15.7	42.87	39.6	15.2	27.72	53.3	15.3	79.75	40.1
16.5	29.91	32.7	16.7	43.45	39.7	16.2	27.27	53.2	16.2	78.18	40.1
17.5	29.88	33.1	17.7	44.02	39.7	17.2	26.83	53.0	17.2	76.62	40.1
18.5	29.79	33.6	18.7	44.58	39.8	18.2	26.41	52.9	18.2	75.08	40.1
19.5	29.69	33.9	19.7	45.11	39.9	19.2	26.01	52.7	19.2	73.60	40.1
20.5	29.57	34.3	20.7	45.62	40.0	20.2	25.62	52.5	20.2	72.16	40.1
21.5	29.47	34.7	21.7	46.10	40.1	21.2	25.25	52.4	21.2	70.79	40.0
22.5	29.40	35.0	22.7	46.57	40.1	22.2	24.88	52.2	22.2	69.46	40.0
23.5	29.37	35.4	23.7	47.06	40.2	23.2	24.50	52.1	23.2	68.14	40.0
24.5	29.38	35.7	24.7	47.55	40.2	24.2	24.13	52.0	24.2	66.81	40.0
25.5	29.40	36.1	25.7	48.08	40.2	25.2	23.75	51.9	25.2	65.46	40.0
26.5	29.44	36.5	26.7	48.62	40.3	26.2	23.33	51.7	26.2	64.01	40.0
27.5	29.44	36.9	27.7	49.18	40.3	27.2	22.91	51.6	27.2	62.53	40.0
28.4	29.41	37.3	28.7	49.77	40.4	28.1	22.48	51.5	28.2	61.00	40.0
29.4	29.31	37.7	29.7	50.35	40.5	29.1	22.05	51.3	29.2	59.43	40.0
30.4	29.13	38.2	30.7	50.92	40.6	30.1	21.64	51.1	30.2	57.84	40.0
31.4	28.89	38.6	31.7	51.47	40.8	31.1	21.25	50.9	31.2	56.28	39.9
32.4	28.60	39.0	32.7	51.99	40.9	32.1	20.85	50.7	32.2	54.77	39.8

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Nov.	h m 1 20	+88° 44′	Nov.	h m 6 50	+87° 12′	Nov.	h m 18 6	+86° 36′	Nov.	h m 19 28	+88° 58′
	s	″		s	″		s	″		s	″
1.4	28.60	39.0	1.7	51.99	40.9	1.1	20.85	50.7	1.2	54.77	39.8
2.4	28.28	39.3	2.7	52.50	41.1	2.1	20.49	50.4	2.2	53.34	39.7
3.4	27.95	39.7	3.7	52.98	41.2	3.1	20.14	50.2	3.2	51.96	39.6
4.4	27.65	40.0	4.7	53.42	41.4	4.1	19.81	50.0	4.2	50.65	39.5
5.4	27.37	40.4	5.7	53.85	41.5	5.1	19.50	49.8	5.2	49.39	39.4
6.4	27.13	40.7	6.6	54.30	41.6	6.1	19.18	49.6	6.2	48.15	39.3
7.4	26.93	41.0	7.6	54.76	41.7	7.1	18.85	49.4	7.2	46.89	39.3
8.4	26.73	41.4	8.6	55.24	41.8	8.1	18.52	49.2	8.2	45.62	39.2
9.4	26.51	41.7	9.6	55.73	41.9	9.1	18.18	49.0	9.2	44.28	39.2
10.4	26.27	42.1	10.6	56.24	42.1	10.1	17.83	48.8	10.2	42.90	39.1
11.4	25.98	42.5	11.6	56.75	42.2	11.1	17.46	48.6	11.2	41.49	39.0
12.4	25.63	42.9	12.6	57.27	42.4	12.1	17.11	48.4	12.2	40.05	38.9
13.4	25.21	43.2	13.6	57.78	42.6	13.1	16.75	48.2	13.2	38.60	38.8
14.4	24.72	43.6	14.6	58.27	42.8	14.1	16.41	47.9	14.2	37.18	38.7
15.4	24.19	44.0	15.6	58.72	43.0	15.1	16.10	47.6	15.2	35.82	38.5
16.4	23.65	44.3	16.6	59.15	43.2	16.1	15.81	47.3	16.2	34.54	38.4
17.4	23.10	44.6	17.6	59.56	43.4	17.1	15.53	47.0	17.2	33.32	38.2
18.4	22.59	44.9	18.6	59.94	43.6	18.1	15.25	46.8	18.2	32.15	38.0
19.4	22.13	45.2	19.6	60.32	43.8	19.1	14.99	46.5	19.2	31.02	37.9
20.4	21.70	45.5	20.6	60.72	44.0	20.1	14.73	46.2	20.1	29.89	37.7
21.4	21.30	45.9	21.6	61.14	44.1	21.1	14.46	46.0	21.1	28.74	37.6
22.4	20.91	46.2	22.6	61.57	44.3	22.1	14.18	45.8	22.1	27.54	37.5
23.4	20.51	46.5	23.6	62.03	44.5	23.1	13.89	45.5	23.1	26.28	37.4
24.4	20.07	46.9	24.6	62.49	44.7	24.1	13.60	45.3	24.1	24.96	37.2
25.4	19.57	47.2	25.6	62.97	44.9	25.1	13.29	45.0	25.1	23.62	37.1
26.4	19.01	47.5	26.6	63.43	45.1	26.1	12.99	44.7	26.1	22.28	36.9
27.4	18.37	47.9	27.6	63.86	45.4	27.1	12.71	44.4	27.1	20.97	36.7
28.4	17.69	48.2	28.6	64.28	45.6	28.1	12.44	44.1	28.1	19.69	36.5
29.4	16.96	48.5	29.6	64.66	45.9	29.1	12.20	43.7	29.1	18.50	36.2
30.4	16.23	48.8	30.6	65.01	46.2	30.1	12.00	43.4	30.1	17.38	36.0
31.4	15.50	49.1	31.6	65.33	46.4	31.1	11.80	43.1	31.1	16.35	35.8

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Dec.	h m 1 19	° ′ +88 44	Dec.	h m 6 51	° ′ +87 12	Dec.	h m 18 6	° ′ +86 36	Dec.	h m 19 27	° ′ +88 58
	s	″		s	″		s	″		s	″
1.4	75.50	49.1	1.6	5.33	46.4	1.1	11.80	43.1	1.1	76.35	35.8
2.4	74.81	49.3	2.6	5.64	46.7	2.1	11.61	42.8	2.1	75.36	35.5
3.3	74.16	49.5	3.6	5.93	46.9	3.1	11.44	42.5	3.1	74.43	35.3
4.3	73.54	49.8	4.6	6.23	47.2	4.0	11.25	42.2	4.1	73.50	35.1
5.3	72.93	50.0	5.6	6.55	47.4	5.0	11.08	41.9	5.1	72.56	34.9
6.3	72.33	50.3	6.6	6.89	47.6	6.0	10.89	41.6	6.1	71.59	34.7
7.3	71.73	50.6	7.6	7.25	47.8	7.0	10.70	41.4	7.1	70.58	34.5
8.3	71.09	50.8	8.6	7.61	48.1	8.0	10.50	41.1	8.1	69.54	34.3
9.3	70.38	51.1	9.6	7.96	48.3	9.0	10.30	40.8	9.1	68.47	34.1
10.3	69.61	51.4	10.6	8.31	48.6	10.0	10.10	40.4	10.1	67.41	33.9
11.3	68.77	51.7	11.6	8.64	48.9	11.0	9.90	40.1	11.1	66.37	33.6
12.3	67.88	51.9	12.5	8.94	49.3	12.0	9.75	39.7	12.1	65.38	33.3
13.3	66.96	52.2	13.5	9.20	49.6	13.0	9.62	39.3	13.1	64.46	33.0
14.3	66.05	52.4	14.5	9.45	49.9	14.0	9.49	39.0	14.1	63.60	32.7
15.3	65.16	52.6	15.5	9.67	50.2	15.0	9.39	38.6	15.1	62.83	32.4
16.3	64.31	52.7	16.5	9.86	50.5	16.0	9.29	38.3	16.1	62.11	32.1
17.3	63.51	52.9	17.5	10.07	50.8	17.0	9.20	38.0	17.1	61.41	31.9
18.3	62.76	53.1	18.5	10.29	51.0	18.0	9.11	37.6	18.1	60.72	31.6
19.3	62.04	53.3	19.5	10.52	51.3	19.0	9.01	37.3	19.1	60.02	31.4
20.3	61.31	53.5	20.5	10.78	51.6	20.0	8.89	37.0	20.1	59.27	31.2
21.3	60.55	53.7	21.5	11.04	51.8	21.0	8.78	36.7	21.1	58.47	30.9
22.3	59.77	53.9	22.5	11.31	52.1	22.0	8.66	36.4	22.1	57.64	30.7
23.3	58.92	54.1	23.5	11.58	52.4	22.9	8.53	36.1	23.1	56.80	30.4
24.3	58.00	54.3	24.5	11.83	52.7	23.9	8.43	35.7	24.1	55.98	30.1
25.3	57.03	54.5	25.5	12.06	53.1	24.9	8.34	35.3	25.1	55.20	29.8
26.3	56.02	54.7	26.5	12.24	53.4	25.9	8.28	35.0	26.0	54.48	29.5
27.3	55.00	54.9	27.5	12.39	53.8	26.9	8.24	34.6	27.0	53.85	29.1
28.3	53.98	55.0	28.5	12.51	54.1	27.9	8.23	34.2	28.0	53.31	28.8
29.3	52.99	55.1	29.5	12.61	54.5	28.9	8.24	33.8	29.0	52.85	28.4
30.3	52.06	55.2	30.5	12.69	54.8	29.9	8.24	33.5	30.0	52.44	28.1
31.3	51.16	55.3	31.5	12.77	55.1	30.9	8.25	33.2	31.0	52.07	27.8
32.3	50.30	55.4	32.5	12.86	55.4	31.9	8.29	32.9	32.0	51.71	27.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*a* Andromedæ.		γ Pegasi. (*Algenib.*)		β Hydri.		12 Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$0^{h}\ 2^{m}$	$+28^{\circ}\ 29'$	$0^{h}\ 7^{m}$	$+14^{\circ}\ 35'$	$0^{h}\ 20^{m}$	$-77^{\circ}\ 50'$	$0^{h}\ 24^{m}$	$-\ 4^{\circ}\ 32'$
	s	″	s	″	s	″	s	″
(Dec.30.2)	50.35 -.14	63.6 -0.8	42.68 -.11	19.4 -0.7	8.49 -.91	108.2 +0.8	34.08 -.10	60.5 -0.6
Jan. 9.2	50.22 .13	62.7 1.0	42.57 .11	18.7 0.8	7.61 .85	107.0 1.4	33.98 .10	61.1 0.5
19.2	50.09 .12	61.5 1.2	42.47 .10	17.8 0.9	6.79 .78	105.3 2.0	33.88 .10	61.6 0.4
29.2	49.98 .10	60.2 1.4	42.38 .09	16.8 1.0	6.05 .69	103.1 2.5	33.79 .09	61.9 0.3
Feb. 8.1	49.89 .08	58.7 1.5	42.30 .07	15.8 1.0	5.41 .58	100.4 2.9	33.71 .07	62.1 -0.1
18.1	49.82 -.05	57.1 -1.6	42.25 -.04	14.9 -0.9	4.90 -.45	97.3 +3.3	33.65 -.05	62.1 +0.1
28.1	49.78 -.02	55.6 1.5	42.22 -.01	14.0 0.8	4.52 .31	93.8 3.6	33.61 -.02	62.0 0.3
Mar. 10.0	49.78 +.02	54.1 1.4	42.22 +.02	13.2 0.6	4.28 -.16	90.2 3.8	33.60 +.01	61.6 0.5
20.0	49.82 .06	52.7 1.2	42.26 .06	12.7 0.4	4.20 .00	86.3 3.9	33.62 .04	61.0 0.7
30.0	49.91 .11	51.6 1.0	42.34 .10	12.4 -0.2	4.27 +.15	82.4 3.9	33.68 .08	60.1 0.9
Apr. 9.0	50.04 +.16	50.8 -0.7	42.46 +.14	12.3 +0.1	4.50 +.31	78.5 +3.8	33.78 +.12	59.1 +1.2
18.9	50.22 .20	50.2 -0.3	42.62 .18	12.5 0.4	4.89 .46	74.7 3.7	33.92 .16	57.8 1.4
28.9	50.44 .24	50.1 0.0	42.82 .22	13.1 0.7	5.42 .60	71.1 3.5	34.11 .20	56.2 1.6
May 8.9	50.70 .26	50.3 +0.4	43.06 .25	14.0 1.0	6.10 .74	67.7 3.2	34.32 .23	54.5 1.8
18.8	50.99 .31	50.9 0.8	43.33 .28	15.1 1.3	6.90 .86	64.7 2.8	34.58 .26	52.6 2.0
28.8	51.32 +.33	52.0 +1.2	43.63 +.30	16.6 +1.6	7.82 +.96	62.0 +2.4	34.86 +.29	50.5 +2.1
June 7.8	51.66 .34	53.3 1.5	43.95 .32	18.3 1.8	8.83 1.04	59.8 2.0	35.16 .31	48.4 2.1
17.8	52.01 .35	55.0 1.8	44.28 .33	20.2 2.0	9.90 1.09	58.1 1.5	35.48 .32	46.3 2.1
27.8	52.36 .34	57.0 2.1	44.61 .33	22.3 2.1	11.02 1.12	56.9 0.9	35.80 .32	44.2 2.1
July 7.7	52.70 .33	59.2 2.3	44.93 .32	24.5 2.2	12.14 1.11	56.2 +0.3	36.12 .31	42.1 2.0
17.7	53.03 +.31	61.6 +2.4	45.24 +.30	26.7 +2.2	13.25+1.08	56.2 -0.3	36.44 +.30	40.2 +1.8
27.7	53.33 .28	64.1 2.5	45.53 .27	28.9 2.2	14.30 1.02	56.7 0.8	36.73 .28	38.5 1.6
Aug. 6.6	53.60 .25	66.7 2.6	45.79 .24	31.1 2.1	15.28 .92	57.7 1.3	37.00 .25	36.9 1.4
16.6	53.84 .22	69.3 2.5	46.02 .21	33.2 2.0	16.15 .80	59.3 1.8	37.24 .22	35.7 1.2
26.6	54.03 .18	71.8 2.4	46.21 .17	35.1 1.8	16.88 .65	61.4 2.2	37.45 .19	34.7 0.9
Sept. 5.5	54.19 +.14	74.2 +2.3	46.37 +.13	36.8 +1.6	17.45 +.48	63.8 -2.6	37.62 +.15	33.9 +0.6
15.5	54.31 .10	76.5 2.2	46.49 .10	38.4 1.4	17.84 .30	66.6 2.8	37.76 .11	33.5 0.3
25.5	54.38 .06	78.6 2.0	46.57 .06	39.7 1.2	18.05 +.11	69.5 3.0	37.85 .08	33.3 +0.1
Oct. 5.5	54.42 +.02	80.6 1.8	46.61 +.03	40.8 1.0	18.07 -.07	72.5 3.0	37.91 .04	33.3 -0.1
15.4	54.42 -.01	82.2 1.6	46.62 .00	41.7 0.8	17.90 .26	75.5 2.9	37.94 +.01	33.5 0.3
25.4	54.39 -.04	83.7 +1.3	46.61 -.03	42.4 +0.6	17.55 -.43	78.3 -2.7	37.94 -.02	34.0 -0.5
Nov. 4.4	54.34 .07	84.8 1.0	46.57 .05	42.9 0.3	17.03 .58	80.8 2.3	37.91 .04	34.5 0.6
14.4	54.26 .09	85.7 0.7	46.50 .07	43.1 +0.1	16.38 .71	82.9 1.9	37.87 .06	35.2 0.7
24.4	54.16 .11	86.2 0.4	46.42 .08	43.1 -0.1	15.61 .81	84.6 1.4	37.80 .07	35.9 0.7
Dec. 4.3	54.05 .12	86.4 +0.1	46.33 .09	42.9 0.3	14.76 .87	85.7 0.8	37.72 .08	36.6 0.7
14.3	53.92 -.13	86.3 -0.2	46.23 -.10	42.5 -0.5	13.86 -.91	86.2 -0.2	37.63 -.09	37.3 -0.7
24.2	53.79 .13	85.9 0.6	46.13 .11	42.0 0.6	12.94 .91	86.1 +0.4	37.53 .10	38.0 0.6
34.2	53.66 -.13	85.2 -0.9	46.02 -.11	41.3 -0.7	12.03 -.89	85.4 +1.0	37.43 -.10	38.6 -0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cassiopeæ.		β Ceti.		21 Cassiopeæ.		ε Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	0 34	+55 56	0 38	−18 34	0 38	+74 23	0 57	+ 7 18
	s	″	s	″	s	″	s	″
(Dec.30.3)	24.86 −.28	74.9 −0.1	12.75 −.12	37.0 −0.5	32.52 −.71	88.1 +0.4	22.87 −.11	49.7 −0.6
Jan. 9.2	24.58 .28	74.6 0.6	12.64 .11	37.4 0.3	31.82 .72	88.2 −0.2	22.76 .11	49.0 0.6
19.2	24.30 .27	73.7 1.1	12.53 .11	37.6 −0.1	31.11 .70	87.7 0.8	22.65 .11	48.4 0.6
29.2	24.03 .25	72.4 1.5	12.42 .10	37.4 +0.2	30.44 .65	86.6 1.4	22.54 .11	47.8 0.6
Feb. 8.1	23.79 .22	70.7 1.9	12.32 .09	37.1 0.5	29.82 .58	84.9 1.9	22.44 .10	47.2 0.6
18.1	23.59 −.18	68.6 −2.2	12.25 −.07	36.4 +0.8	29.29 −.48	82.8 −2.3	22.35 −.08	46.7 −0.5
28.1	23.43 .13	66.3 2.4	12.19 .04	35.5 1.0	28.87 .36	80.3 2.6	22.28 .06	46.2 0.4
Mar. 10.1	23.34 −.06	63.8 2.5	12.17 −.01	34.4 1.3	28.57 .22	77.6 2.8	22.24 −.03	46.0 −0.2
20.1	23.31 +.01	61.3 2.4	12.18 +.02	33.0 1.5	28.42 −.07	74.7 2.9	22.23 +.01	45.9 0.0
30.0	23.36 .08	58.9 2.3	12.22 .06	31.3 1.8	28.43 +.08	71.8 2.8	22.26 .05	46.0 +0.2
Apr. 9.0	23.47 +.16	56.7 −2.1	12.31 +.11	29.4 +2.0	28.58 +.23	69.0 −2.7	22.33 +.09	46.3 +0.4
19.0	23.67 .23	54.7 1.8	12.43 .15	27.3 2.2	28.89 .38	66.4 2.4	22.44 .13	46.9 0.7
29.0	23.93 .30	53.1 1.4	12.60 .19	25.1 2.3	29.34 .52	64.1 2.1	22.59 .17	47.8 1.0
May 8.9	24.26 .36	51.9 1.0	12.81 .23	22.7 2.4	29.92 .64	62.2 1.7	22.79 .21	48.9 1.2
18.9	24.65 .41	51.2 −0.5	13.06 .26	20.3 2.4	30.61 .74	60.8 1.2	23.02 .25	50.2 1.5
28.9	25.08 +.45	51.0 0.0	13.34 +.29	17.8 +2.4	31.39 +.81	59.9 −0.7	23.29 +.28	51.8 +1.7
June 7.8	25.54 .47	51.2 +0.5	13.64 .31	15.4 2.3	32.24 .86	59.5 −0.1	23.58 .30	53.6 1.9
17.8	26.03 .48	52.0 1.0	13.96 .33	13.1 2.2	33.12 .89	59.6 +0.4	23.89 .31	55.5 2.0
27.8	26.52 .49	53.2 1.5	14.30 .33	11.0 2.0	34.02 .90	60.3 1.0	24.21 .32	57.5 2.0
July 7.8	27.01 .48	55.0 1.9	14.63 .33	9.0 1.8	34.91 .88	61.5 1.5	24.54 .32	59.5 2.0
17.7	27.47 +.46	57.0 +2.3	14.96 +.32	7.3 +1.5	35.77 +.84	63.3 +2.0	24.86 +.31	61.6 +2.0
27.7	27.92 .42	59.4 2.6	15.27 .30	5.9 1.2	36.59 .78	65.5 2.4	25.16 .30	63.6 1.9
Aug. 6.7	28.32 .38	62.1 2.8	15.56 .27	4.8 0.9	37.33 .70	68.1 2.8	25.45 .27	65.5 1.8
16.6	28.68 .34	65.1 3.1	15.82 .24	4.1 0.5	37.99 .61	71.0 3.1	25.71 .24	67.2 1.6
26.6	28.99 .28	68.2 3.2	16.05 .21	3.8 +0.2	38.57 .52	74.2 3.3	25.94 .21	68.7 1.4
Sept. 5.6	29.24 +.23	71.5 +3.3	16.24 +.17	3.8 −0.2	39.03 +.41	77.7 +3.5	26.14 +.18	70.1 +1.2
15.6	29.44 .17	74.8 3.3	16.39 .13	4.1 0.5	39.40 .30	81.3 3.6	26.31 .15	71.2 1.0
25.6	29.59 .11	78.1 3.2	16.50 .09	4.7 0.6	39.64 .18	85.0 3.7	26.44 .11	72.1 0.8
Oct. 5.5	29.67 +.05	81.3 3.1	16.58 .05	5.6 1.0	39.77 +.06	88.8 3.7	26.53 .08	72.7 0.6
15.5	29.70 .00	84.4 2.9	16.61 +.02	6.6 1.1	39.78 −.05	92.4 3.6	26.60 .05	73.2 0.3
25.5	29.67 −.05	87.3 +2.7	16.62 −.01	7.8 −1.2	39.67 −.16	95.9 +3.4	26.63 +.02	73.4 +0.1
Nov. 4.4	29.60 .10	89.9 2.4	16.59 .04	9.1 1.3	39.45 .27	99.2 3.1	26.64 −.01	73.5 0.0
14.4	29.48 .14	92.1 2.1	16.54 .06	10.4 1.3	39.12 .38	102.3 2.8	26.62 .03	73.4 −0.2
24.4	29.31 .18	94.0 1.7	16.47 .08	11.6 1.2	38.68 .47	104.9 2.4	26.58 .05	73.2 0.3
Dec. 4.3	29.11 .22	95.5 1.2	16.39 .09	12.8 1.1	38.16 .56	107.0 1.9	26.52 .07	72.8 0.4
14.3	28.88 −.25	96.5 +0.7	16.29 −.10	13.8 −0.9	37.57 −.63	108.7 +1.4	26.44 −.09	72.3 −0.5
24.3	28.62 .27	96.9 +0.2	16.18 .11	14.5 0.7	36.91 .68	109.8 0.8	26.35 .10	71.8 0.6
34.3	28.35 −.28	96.9 −0.3	16.06 −.12	15.[illegible] −0.4	36.22 −.71	110.2 +0.2	26.24 −.11	71.2 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Andromedæ.		θ¹ Ceti.		38 Cassiopeæ.		η Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 1 3	+35° 3′	h m 1 18	− 8° 43′	h m 1 23	+69° 42′	h m 1 25	+14° 47′
	s	″	s	″	s	″	s	″
(Dec.30.3)	43.73 −.15	20.1 −0.2	40.25 −.11	73.6 −0.7	14.89 −.49	66.6 +0.8	45.03 −.11	41.7 −0.5
Jan. 9.3	43.58 .15	19.7 0.5	40.14 .11	74.3 0.6	14.39 .51	67.1 +0.2	44.92 .12	41.2 0.6
19.2	43.43 .16	19.0 0.8	40.03 .12	74.8 0.4	13.87 .52	67.1 −0.3	44.80 .12	40.6 0.6
29.2	43.27 .15	18.0 1.1	39.91 .12	75.1 −0.2	13.35 .51	66.5 0.9	44.68 .12	39.9 0.7
Feb. 8.2	43.12 .14	16.8 1.3	39.80 .11	75.2 0.0	12.85 .48	65.3 1.4	44.56 .11	39.2 0.7
18.1	42.99 −.12	15.4 −1.5	39.70 −.09	75.1 +0.2	12.39 −.43	63.6 −1.9	44.45 −.10	38.5 −0.7
28.1	42.88 .09	13.9 1.6	39.61 .07	74.7 0.4	12.00 .36	61.6 2.2	44.36 .08	37.8 0.6
Mar.10.1	42.81 .05	12.3 1.6	39.55 .05	74.2 0.7	11.70 .26	59.2 2.5	44.29 .05	37.2 0.5
20.1	42.78 −.01	10.7 1.5	39.52 −.02	73.4 0.9	11.49 .15	56.6 2.7	44.25 −.02	36.7 0.4
30.0	42.80 +.04	9.2 1.4	39.52 +.02	72.3 1.2	11.40 −.03	53.8 2.7	44.25 +.02	36.3 −0.2
Apr. 9.0	42.86 +.09	7.9 −1.2	39.56 +.06	71.0 +1.4	11.42 +.09	51.1 −2.6	44.29 +.06	36.2 0.0
19.0	42.98 .15	6.9 0.9	39.65 .10	69.5 1.6	11.57 .21	48.5 2.5	44.38 .11	36.3 +0.2
29.0	43.16 .20	6.2 0.6	39.78 .15	67.8 1.8	11.84 .32	46.2 2.2	44.51 .15	36.7 0.5
May 8.9	43.38 .24	5.8 −0.2	39.95 .19	65.9 2.0	12.23 .43	44.1 1.9	44.69 .19	37.3 0.8
18.9	43.65 .28	5.8 +0.2	40.16 .23	63.8 2.1	12.71 .52	42.4 1.5	44.91 .23	38.2 1.0
28.9	43.95 +.32	6.1 +0.5	40.41 +.26	61.6 +2.2	13.28 +.60	41.2 −1.0	45.16 +.27	39.4 +1.3
June 7.8	44.29 .34	6.8 0.9	40.68 .29	59.4 2.2	13.92 .66	40.4 −0.5	45.45 .30	40.8 1.5
17.8	44.65 .36	7.9 1.3	40.98 .31	57.2 2.2	14.61 .71	40.2 0.0	45.76 .32	42.4 1.7
27.8	45.02 .37	9.4 1.6	41.30 .32	55.0 2.1	15.34 .73	40.5 +0.5	46.08 .33	44.2 1.8
July 7.8	45.39 .37	11.1 1.9	41.62 .32	52.9 2.0	16.08 .73	41.2 1.0	46.41 .33	46.0 1.9
17.7	45.76 +.36	13.1 +2.1	41.94 +.32	50.9 +1.8	16.81 +.72	42.5 +1.5	46.74 +.32	48.0 +2 0
27.7	46.11 .34	15.2 2.3	42.25 .31	49.2 1.6	17.53 .70	44.2 1.9	47.06 .31	50.0 2.0
Aug. 6.7	46.44 .32	17.5 2.4	42.55 .29	47.7 1.3	18.21 .65	46.4 2.3	47.36 .29	51.9 1.9
16.6	46.75 .29	20.0 2.5	42.83 .26	46.5 1.0	18.84 .60	48.9 2.7	47.65 .27	53.8 1.8
26.6	47.02 .25	22.5 2.5	43.07 .23	45.6 0.7	19.41 .53	51.8 3.0	47.90 .24	55.6 1.7
Sept. 5.6	47.25 +.21	25.0 +2.5	43.29 +.20	45.1 +0.4	19.91 +.46	54.9 +3.2	48.13 +.21	57.2 +1.5
15.6	47.44 .17	27.5 2.4	43.47 .17	44.8 +0.1	20.33 .38	58.2 3.4	48.32 .18	58.7 1.4
25.5	47.60 .13	29.8 2.3	43.62 .13	44.8 −0.2	20.67 .30	61.6 3.5	48.46 .15	60.0 1.2
Oct. 5.5	47.71 .09	32.1 2.2	43.74 .10	45.2 0.4	20.93 .21	65.1 3.5	48.61 .11	61.0 1.0
15.5	47.79 .06	34.1 2.0	43.82 .06	45.7 0.6	21.09 .12	68.7 3.5	48.71 .08	61.9 0.8
25.5	47.84 +.03	36.0 +1.8	43.87 +.03	46.4 −0.8	21.17 +.03	72.1 +3.4	48.77 +.05	62.6 +0.6
Nov. 4.4	47.84 −.01	37.7 1.5	43.89 .00	47.3 0.9	21.15 −.06	75.4 3.2	48.81 +.02	63.1 0.4
14.4	47.82 .04	39.1 1.2	43.88 −.03	48.3 1.0	21.04 .15	78.5 2.9	48.81 −.01	63.4 +0.2
24.4	47.77 .07	40.2 0.9	43.85 .04	49.3 1.0	20.85 .24	81.3 2.6	48.80 .03	63.5 0.0
Dec. 4.3	47.68 .09	41.0 0.6	43.80 .06	50.3 1.0	20.57 .32	83.7 2.2	48.75 .05	63.5 −0.1
14.3	47.58 −.11	41.5 +0.3	43.72 −.08	51.3 −0.9	20.21 −.39	85.6 +1.7	48.69 −.07	63.3 −0.2
24.3	47.45 .13	41.7 0.0	43.63 .10	52.2 0.8	19.80 .44	87.1 1.2	48.61 .09	63.0 0.4
34.3	47.31 −.15	41.5 −0.3	43.53 −.11	52.9 −0.7	19.33 −.49	88.0 +0.6	48.51 −.11	62.5 −0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Eridani. (*Achernar.*)		ο Piscium.		β Arietis.		50 Cassiopeæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$1^h\ 33^m$	$-57^\circ\ 46'$	$1^h\ 39^m$	$+\ 8^\circ\ 37'$	$1^h\ 48^m$	$+20^\circ\ 17'$	$1^h\ 54^m$	$+71^\circ\ 54'$
	s	"	s	"	s	"	s	"
(Dec.30.3)	44.30 -.31	67.8 -0.6	44.32 -.10	9.1 -0.6	43.39 -.10	10.6 -0.3	17.17 -.51	29.8 +1.3
Jan. 9.3	43.98 .32	68.1 0.0	44.21 .11	8.6 0.6	43.28 .12	10.3 0.4	16.64 .56	30.8 0.7
19.2	43.66 .32	67.9 +0.5	44.10 .12	8.0 0.6	43.16 .13	9.8 0.6	16.06 .59	31.2 +0.1
29.2	43.34 .31	67.1 1.1	43.98 .12	7.4 0.6	43.02 .14	9.2 0.7	15.46 .60	31.0 -0.5
Feb. 8.2	43.04 .29	65.8 1.6	43.86 .12	6.9 0.5	42.89 .13	8.5 0.8	14.87 .56	30.3 1.0
18.1	42.76 -.26	64.0 +2.1	43.74 -.11	6.4 -0.5	42.76 -.12	7.7 -0.8	14.31 -.53	29.0 -1.5
28.1	42.52 .22	61.7 2.5	43.64 .09	6.0 0.4	42.65 .10	6.9 0.8	13.81 .46	27.3 1.9
Mar.10.1	42.32 .17	59.0 2.8	43.57 .06	5.7 -0.2	42.55 .07	6.1 0.8	13.39 .37	25.1 2.3
20.1	42.17 .12	56.0 3.1	43.52 -.03	5.5 0.0	42.49 -.04	5.3 0.7	13.07 .26	22.7 2.5
30.0	42.08 -.06	52.7 3.4	43.50 +.01	5.6 +0.1	42.47 .00	4.7 0.5	12.88 -.13	20.0 2.7
Apr. 9.0	42.05 +.01	49.2 +3.6	43.53 +.05	5.8 +0.3	42.49 +.04	4.2 -0.3	12.81 .00	17.3 -2.7
19.0	42.09 .08	45.6 3.7	43.60 .09	6.3 0.6	42.56 .09	4.0 -0.1	12.88 +.14	14.6 2.6
29.0	42.20 .15	41.9 3.7	43.72 .14	7.0 0.8	42.67 .14	4.0 +0.1	13.09 .27	12.1 2.4
May 8.9	42.39 .22	38.3 3.6	43.88 .18	7.9 1.1	42.83 .18	4.2 0.4	13.43 .39	9.8 2.1
18.9	42.64 .28	34.7 3.5	44.08 .22	9.1 1.3	43.03 .22	4.7 0.7	13.89 .51	7.8 1.8
28.9	42.95 +.34	31.4 +3.2	44.32 +.25	10.5 +1.5	43.28 +.26	5.5 +0.9	14.45 +.61	6.2 -1.4
June 7.8	43.32 .39	28.3 2.9	44.59 .28	12.1 1.7	43.56 .29	6.6 1.2	15.11 .69	5.0 0.9
17.8	43.74 .43	25.6 2.6	44.88 .30	13.9 1.8	43.86 .31	7.9 1.4	15.84 .75	4.3 -0.4
27.8	44.19 .46	23.1 2.2	45.20 .32	15.7 1.9	44.19 .33	9.4 1.6	16.62 .79	4.1 +0.1
July 7.8	44.66 .48	21.2 1.7	45.52 .32	17.7 1.9	44.53 .34	11.1 1.7	17.43 .81	4.4 0.6
17.7	45.15 +.49	19.8 +1.2	45.84 +.32	19.6 +1.9	44.86 +.33	12.9 +1.8	18.25 +.82	5.2 +1.1
27.7	45.64 .48	18.9 +0.6	46.16 .31	21.5 1.9	45.19 .32	14.8 1.9	19.07 .80	6.5 1.5
Aug. 6.7	46.11 .46	18.6 0.0	46.46 .29	23.3 1.8	45.51 .31	16.7 1.9	19.87 .77	8.2 1.9
16.6	46.56 .43	18.9 -0.6	46.75 .27	25.0 1.6	45.82 .29	18.6 1.9	20.62 .72	10.4 2.3
26.6	46.96 .38	19.7 1.1	47.01 .24	26.6 1.4	46.09 .26	20.4 1.8	21.32 .66	12.9 2.6
Sept. 5.6	47.32 +.33	21.1 -1.6	47.24 +.21	27.9 +1.2	46.35 +.23	22.2 +1.7	21.95 +.59	15.7 +3.0
15.6	47.62 .27	22.9 2.0	47.45 .19	29.1 1.0	46.57 .20	23.8 1.6	22.51 .51	18.8 3.2
25.5	47.86 .20	25.1 2.4	47.62 .16	30.0 0.8	46.75 .17	25.3 1.4	22.98 .43	22.1 3.3
Oct. 5.5	48.02 .13	27.7 2.7	47.76 .12	30.7 0.6	46.91 .14	26.7 1.2	23.37 .34	25.5 3.4
15.5	48.12 +.06	30.5 2.8	47.87 .09	31.2 0.4	47.04 .11	27.8 1.1	23.66 .24	28.9 3.5
25.5	48.14 -.01	33.3 -2.9	47.95 +.06	31.4 +0.2	47.13 +.08	28.8 +0.9	23.84 +.13	32.4 +3.4
Nov. 4.4	48.10 .08	36.2 2.8	47.99 .03	31.5 0.0	47.19 .05	29.6 0.7	23.92 +.03	35.8 3.3
14.4	47.99 .14	38.9 2.6	48.02 +.01	31.4 -0.1	47.22 +.02	30.2 0.5	23.89 -.08	39.1 3.1
24.4	47.83 .19	41.4 2.3	48.01 -.02	31.2 0.3	47.22 -.01	30.7 0.3	23.76 .18	42.1 2.8
Dec. 4.3	47.62 .23	43.6 1.9	47.98 .04	30.9 0.4	47.20 .04	30.9 +0.2	23.53 .28	44.8 2.5
14.3	47.36 -.27	45.3 -1.5	47.92 -.06	30.5 -0.4	47.15 -.06	31.0 0.0	23.20 -.37	47.1 +2.1
24.3	47.07 .30	46.5 1.0	47.85 .08	30.1 0.5	47.07 .09	30.9 -0.2	22.78 .45	49.0 1.6
34.3	46.76 -.32	47.2 -0.4	47.76 -.10	29.5 -0.6	46.97 -.11	30.7 -0.3	22.29 -.52	50.3 +1.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Arietis.		ξ¹ Ceti.		ι Cassiopeæ.		ξ² Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 2 1	+22° 57′	h m 2 7	+ 8° 20′	h m 2 20	+66° 55′	h m 2 22	+ 7° 58′
	s	″	s	″	s	″	s	″
(Dec.30.3)	8.21 -.10	29.1 -0.1	19.60 -.09	42.3 -0.5	14.47 -.35	32.8 +1.4	28.16 -.08	50.9 -0.5
Jan. 9.3	8.10 .12	28.8 0.3	19.51 .11	41.8 0.5	14.10 .39	34.0 0.9	28.08 .10	50.3 0.5
19.2	7.97 .13	28.4 0.5	19.39 .12	41.2 0.5	13.69 .43	34.6 +0.3	27.97 .12	49.8 0.5
29.2	7.83 .14	27.9 0.6	19.27 .13	40.7 0.5	13.24 .45	34.7 -0.2	27.84 .13	49.3 0.5
Feb. 8.2	7.69 .14	27.2 0.7	19.14 .13	40.2 0.5	12.78 .45	34.2 0.7	27.70 .13	48.9 0.4
18.2	7.55 -.13	26.4 -0.8	19.01 -.12	39.8 -0.4	12.34 -.43	33.2 -1.2	27.57 -.13	48.5 -0.4
28.2	7.43 .11	25.5 0.9	18.89 .11	39.4 0.3	11.92 .39	31.8 1.6	27.45 .12	48.1 0.3
Mar. 10.1	7.32 .09	24.6 0.9	18.79 .09	39.2 -0.2	11.57 .32	29.9 2.0	27.34 .10	47.9 -0.2
20.1	7.25 .06	23.8 0.8	18.72 .06	39.0 0.0	11.28 .24	27.8 2.3	27.26 .07	47.8 0.0
30.1	7.21 -.02	23.1 0.7	18.68 -.02	39.1 +0.1	11.08 .15	25.4 2.4	27.20 -.04	47.9 +0.2
Apr. 9.1	7.22 +.03	22.5 -0.5	18.68 +.02	39.3 +0.3	10.99 -.04	22.9 -2.5	27.19 .00	48.1 +0.4
19.0	7.27 .08	22.0 0.3	18.72 .06	39.8 0.6	11.00 +.07	20.4 2.4	27.22 +.05	48.6 0.6
29.0	7.38 .13	21.8 -0.1	18.81 .11	40.4 0.8	11.12 .17	18.0 2.3	27.29 .10	49.2 0.8
May 9.0	7.53 .18	21.9 +0.2	18.95 .16	41.4 1.0	11.35 .28	15.7 2.1	27.41 .14	50.1 1.0
18.9	7.73 .22	22.2 0.5	19.13 .20	42.5 1.2	11.68 .38	13.7 1.8	27.57 .18	51.2 1.2
28.9	7.97 +.26	22.8 +0.7	19.34 +.23	43.8 +1.4	12.11 +.46	12.1 -1.4	27.78 +.22	52.5 +1.4
June 7.9	8.24 .29	23.7 1.0	19.60 .26	45.3 1.6	12.61 .54	10.9 1.0	28.02 .25	54.0 1.6
17.9	8.55 .31	24.8 1.2	19.88 .29	47.0 1.7	13.19 .60	10.0 0.6	28.29 .28	55.7 1.7
27.8	8.87 .33	26.2 1.4	20.18 .31	48.8 1.8	13.81 .64	9.7 -0.1	28.59 .30	57.4 1.8
July 7.8	9.21 .34	27.7 1.6	20.50 .32	50.6 1.9	14.47 .66	9.8 +0.4	28.90 .31	59.2 1.8
17.8	9.55 +.34	29.4 +1.7	20.82 +.32	52.5 +1.9	15.15 +.68	10.3 +0.8	29.22 +.32	61.0 +1.8
27.7	9.89 .33	31.2 1.8	21.14 .31	54.3 1.8	15.83 .67	11.3 1.2	29.54 .32	62.8 1.7
Aug. 6.7	10.22 .32	33.1 1.9	21.45 .30	56.1 1.7	16.50 .66	12.8 1.6	29.85 .31	64.5 1.7
16.7	10.53 .30	35.0 1.9	21.75 .29	57.7 1.6	17.15 .63	14.6 2.0	30.16 .29	66.1 1.5
26.7	10.82 .28	36.8 1.8	22.03 .27	59.2 1.4	17.76 .59	16.8 2.3	30.44 .27	67.6 1.3
Sept. 5.6	11.09 +.25	38.6 +1.7	22.28 +.24	60.5 +1.2	18.33 +.54	19.3 +2.6	30.70 +.25	68.8 +1.1
15.6	11.32 .22	40.3 1.6	22.50 .21	61.5 1.0	18.84 .48	22.0 2.9	30.94 .22	69.8 0.9
25.6	11.53 .19	41.9 1.5	22.70 .18	62.4 0.7	19.29 .42	25.0 3.1	31.15 .19	70.6 0.7
Oct. 5.6	11.70 .16	43.3 1.4	22.87 .15	63.0 0.5	19.67 .34	28.1 3.2	31.33 .16	71.2 0.5
15.5	11.84 .12	44.6 1.2	23.00 .12	63.4 0.3	19.99 .27	31.3 3.2	31.48 .13	71.5 0.3
25.5	11.95 +.09	45.7 +1.0	23.11 +.09	63.6 +0.1	20.22 +.19	34.6 +3.2	31.60 +.10	71.7 +0.1
Nov. 4.5	12.03 .06	46.6 0.8	23.18 .06	63.6 0.0	20.37 .11	37.8 3.1	31.69 .07	71.7 -0.1
14.4	12.07 +.03	47.4 0.7	23.23 +.03	63.5 -0.2	20.44 +.03	40.9 3.0	31.75 .04	71.5 0.2
24.4	12.08 .00	48.0 0.5	23.25 .00	63.3 0.3	20.43 -.06	43.8 2.8	31.79 +.02	71.2 0.3
Dec. 4.4	12.07 -.03	48.4 0.3	23.24 -.02	62.9 0.4	20.33 .14	46.5 2.5	31.79 -.01	70.8 0.4
14.4	12.03 -.06	48.7 +0.1	23.20 -.05	62.5 -0.4	20.14 -.22	48.8 +2.1	31.77 -.04	70.4 -0.5
24.3	11.96 .08	48.7 0.0	23.14 .07	62.0 0.5	19.88 .29	50.7 1.7	31.72 .06	69.9 0.5
34.3	11.86 -.11	48.6 -0.2	23.06 -.09	61.5 -0.5	19.55 -.30	52.2 +1.2	31.64 -.09	69.4 -0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ceti.		α Ceti.		48 Cephei (H.)		ζ Arietis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 2 37	° ′ + 2 47	h m 2 56	° ′ + 3 40	h m 3 6	° ′ +77 20	h m 3 8	° ′ +20 38
	s	″	s	″	s	″	s	″
(Dec.30.3)	45.44 -.08	5.7 -0.7	41.32 -.07	12.7 -0.7	45.94 -.57	45.2 +2.2	45.18 -.06	58.3 0.0
Jan. 9.3	45.35 .10	5.0 0.6	41.24 .09	12.0 0.6	45.32 .69	47.2 1.7	45.10 .09	58.2 -0.1
19.2	45.24 .12	4.4 0.5	41.14 .11	11.5 0.5	44.58 .78	48.6 1.2	45.00 .12	58.0 0.2
29.2	45.12 .13	3.9 0.4	41.01 .13	11.0 0.4	43.75 .85	49.5 +0.6	44.87 .14	57.7 0.3
Feb. 8.2	44.98 .14	3.5 0.3	40.88 .14	10.6 0.3	42.88 .88	49.8 0.0	44.72 .15	57.4 0.4
18.2	44.84 -.14	3.2 -0.2	40.74 -.14	10.2 -0.2	42.00 -.87	49.5 -0.6	44.57 -.16	56.9 -0.5
28.2	44.71 .13	3.0 -0.1	40.59 .13	10.1 -0.1	41.13 .83	48.7 1.1	44.41 .15	56.4 0.5
Mar. 10.1	44.59 .11	3.0 0.0	40.47 .12	10.0 0.0	40.34 .74	47.3 1.6	44.27 .13	55.9 0.6
20.1	44.50 .08	3.1 +0.2	40.36 .10	10.1 +0.2	39.65 .62	45.4 2.0	44.15 .11	55.3 0.5
30.1	44.43 .05	3.5 0.4	40.28 .07	10.4 0.4	39.09 .47	43.2 2.4	44.05 .08	54.8 0.4
Apr. 9.1	44.40 -.01	4.0 +0.6	40.23 -.03	10.8 +0.6	38.70 -.30	40.7 -2.6	43.99 -.04	54.4 -0.3
19.0	44.41 +.03	4.7 0.8	40.22 +.02	11.5 0.8	38.49 -.12	38.0 2.7	43.98 +.01	54.1 0.2
29.0	44.47 .08	5.7 1.0	40.26 .06	12.3 1.0	38.46 +.07	35.2 2.7	44.01 .06	54.0 -0.1
May 9.0	44.57 .12	6.8 1.2	40.35 .11	13.4 1.2	38.63 .26	32.5 2.6	44.10 .11	54.0 +0.1
19.0	44.72 .17	8.2 1.4	40.48 .15	14.7 1.4	38.98 .44	30.0 2.4	44.23 .16	54.2 0.3
28.9	44.91 +.21	9.7 +1.6	40.65 +.19	16.1 +1.5	39.51 +.61	27.7 -2.2	44.41 +.20	54.7 +0.5
June 7.9	45.13 .24	11.4 1.7	40.86 .23	17.7 1.6	40.20 .76	25.6 1.9	44.63 .24	55.3 0.8
17.9	45.39 .27	13.2 1.8	41.11 .26	19.4 1.7	41.03 .89	23.9 1.5	44.88 .27	56.2 1.0
27.8	45.67 .29	15.1 1.9	41.38 .28	21.2 1.8	41.98 1.00	22.7 1.0	45.17 .30	57.2 1.1
July 7.8	45.98 .31	17.0 1.9	41.68 .30	23.0 1.8	43.02 1.08	21.9 0.6	45.48 .32	58.4 1.2
17.8	46.29 +.31	18.8 +1.8	41.98 +.31	24.8 +1.8	44.14 +1.12	21.5 -0.1	45.81 +.33	59.8 +1.4
27.7	46.60 .30	20.6 1.7	42.30 .31	26.6 1.7	45.29 1.16	21.6 +0.4	46.14 .33	61.2 1.4
Aug. 6.7	46.92 .30	22.3 1.6	42.61 .31	28.2 1.5	46.46 1.17	22.2 0.8	46.47 .33	62.6 1.5
16.7	47.22 .29	23.7 1.4	42.92 .30	29.6 1.3	47.63 1.15	23.3 1.3	46.80 .32	64.1 1.5
26.7	47.51 .27	25.0 1.2	43.21 .28	30.9 1.1	48.77 1.12	24.8 1.7	47.12 .31	65.5 1.4
Sept. 5.6	47.77 +.25	26.0 +0.9	43.49 +.26	31.9 +0.9	49.86 +1.05	26.6 +2.1	47.42 +.29	66.9 +1.3
15.6	48.02 .23	26.8 0.6	43.75 .24	32.7 0.7	50.88 .98	28.9 2.4	47.70 .27	68.1 1.2
25.6	48.24 .21	27.3 0.4	43.98 .22	33.2 0.4	51.82 .89	31.5 2.7	47.96 .25	69.3 1.1
Oct. 5.6	48.43 .18	27.6 +0.1	44.19 .19	33.5 +0.2	52.66 .78	34.4 3.0	48.20 .22	70.3 1.0
15.5	48.59 .15	27.6 -0.1	44.37 .17	33.5 -0.1	53.38 .65	37.5 3.2	48.40 .19	71.2 0.9
25.5	48.72 +.12	27.4 -0.3	44.52 +.14	33.4 -0.3	53.97 +.52	40.8 +3.3	48.58 +.16	72.0 +0.7
Nov. 4.5	48.83 .09	27.1 0.5	44.64 .11	33.0 0.4	54.42 .36	44.2 3.4	48.73 .13	72.7 0.6
14.4	48.90 .06	26.6 0.6	44.74 .08	32.5 0.5	54.70 .20	47.6 3.4	48.85 .10	73.2 0.5
24.4	48.94 +.03	25.9 0.6	44.80 .05	31.9 0.6	54.82 +.04	50.9 3.3	48.93 .07	73.6 0.4
Dec. 4.4	48.96 .00	25.3 0.7	44.83 +.02	31.2 0.7	54.78 -.13	54.1 3.1	48.96 +.05	73.9 0.2
14.4	48.94 -.03	24.5 -0.7	44.83 -.02	30.5 -0.7	54.56 -.30	57.1 +2.8	49.00 .00	74.1 +0.1
24.3	48.90 .06	23.8 0.7	44.80 .05	29.8 0.7	54.18 .46	59.8 2.5	48.98 -.04	74.1 0.0
34.3	48.83 -.08	23.1 -0.7	44.74 -.08	29.1 -0.7	53.65 -.61	62.0 +2.1	48.93 -.07	74.1 -0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Persei.		*ε* Eridani.		*δ* Persei.		*η* Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 16	° ′ +49 28	h m 3 27	° ′ − 9 48	h m 3 35	° ′ +47 26	h m 3 41	° ′ +23 46
	s	″	s	″	s	″	s	″
(Dec.30.4)	41.25 −.11	61.5 +1.2	53.79 −.06	74.5 −1.2	18.74 −.08	54.8 +1.3	7.69 −.04	33.9 +0.2
Jan. 9.3	41.11 .15	62.6 0.9	53.72 .09	75.6 1.0	18.63 .13	56.0 1.0	7.63 .08	34.0 +0.1
19.3	40.94 .19	63.3 0.6	53.61 .12	76.5 0.8	18.48 .17	56.8 0.7	7.54 .11	34.0 0.0
29.3	40.72 .22	63.7 +0.2	53.49 .14	77.2 0.6	18.29 .21	57.2 +0.3	7.42 .13	34.0 −0.1
Feb. 8.2	40.49 .24	63.7 −0.2	53.34 .15	77.7 0.3	18.07 .23	57.4 0.0	7.27 .15	33.8 0.2
18.2	40.24 −.25	63.3 −0.6	53.18 −.16	77.9 −0.1	17.83 −.24	57.2 −0.4	7.11 −.16	33.4 −0.3
28.2	39.99 .24	62.5 0.9	53.02 .16	77.9 +0.2	17.59 .24	56.6 0.7	6.94 .16	33.0 0.4
Mar. 10.2	39.75 .22	61.4 1.2	52.87 .15	77.6 0.4	17.36 .22	55.7 1.0	6.78 .15	32.6 0.5
20.1	39.55 .18	60.1 1.4	52.73 .13	77.1 0.7	17.15 .19	54.6 1.2	6.63 .13	32.0 0.5
30.1	39.39 .13	58.5 1.6	52.62 .10	76.2 1.0	16.98 .15	53.2 1.4	6.51 .10	31.5 0.5
Apr. 9.1	39.28 −.07	56.9 −1.7	52.54 −.06	75.2 +1.2	16.86 −.09	51.7 −1.5	6.43 −.06	31.0 −0.5
19.1	39.24 −.01	55.1 1.7	52.49 −.02	73.9 1.4	16.80 −.03	50.2 1.6	6.38 −.02	30.6 0.4
29.0	39.26 +.06	53.4 1.6	52.49 +.02	72.3 1.6	16.80 +.03	48.6 1.5	6.38 +.03	30.2 0.3
May 9.0	39.35 .13	51.9 1.5	52.54 .06	70.6 1.8	16.86 .10	47.1 1.4	6.44 .08	30.0 −0.1
19.0	39.51 .19	50.4 1.3	52.63 .11	68.6 2.0	16.99 .16	45.7 1.3	6.54 .12	30.0 +0.1
28.9	39.74 +.25	49.2 −1.1	52.76 +.16	66.6 +2.1	17.19 +.22	44.5 −1.1	6.69 +.17	30.1 +0.2
June 7.9	40.02 .31	48.3 0.8	52.94 .20	64.4 2.2	17.44 .28	43.6 0.8	6.89 .21	30.5 0.4
17.9	40.35 .36	47.7 0.4	53.15 .23	62.1 2.2	17.75 .33	42.9 0.5	7.12 .25	31.0 0.6
29.9	40.73 .39	47.3 −0.1	53.39 .26	59.9 2.2	18.10 .37	42.5 −0.2	7.39 .28	31.7 0.8
July 7.8	41.14 .42	47.4 +0.2	53.66 .28	57.7 2.1	18.49 .40	42.4 +0.1	7.69 .31	32.6 0.9
17.8	41.58 +.44	47.7 +0.5	53.95 +.29	55.6 +2.0	18.90 +.42	42.6 +0.4	8.01 +.33	33.6 +1.0
27.8	42.02 .45	48.4 0.8	54.25 .30	53.8 1.8	19.33 .43	43.1 0.7	8.34 .33	34.7 1.1
Aug. 6.8	42.48 .45	49.4 1.1	54.56 .30	52.1 1.5	19.76 .44	43.9 0.9	8.68 .34	35.9 1.2
16.7	42.92 .44	50.6 1.4	54.86 .30	50.7 1.2	20.20 .43	44.9 1.1	9.02 .33	37.1 1.2
26.7	43.36 .43	52.1 1.6	55.16 .29	49.7 0.9	20.63 .42	46.2 1.4	9.35 .32	38.3 1.2
Sept. 5.7	43.78 +.41	53.8 +1.8	55.45 +.28	49.0 +0.5	21.05 +.40	47.7 +1.6	9.67 +.31	39.5 +1.2
15.6	44.17 .38	55.6 2.0	55.72 .26	48.6 +0.2	21.44 .38	49.3 1.7	9.98 .30	40.7 1.1
25.6	44.54 .35	57.6 2.1	55.97 .24	48.6 −0.2	21.81 .36	51.1 1.8	10.27 .28	41.8 1.0
Oct. 5.6	44.87 .31	59.8 2.2	56.19 .22	49.0 0.5	22.16 .33	53.0 1.9	10.53 .25	42.7 0.9
15.6	45.17 .27	62.0 2.2	56.39 .19	49.7 0.8	22.47 .29	54.9 2.0	10.77 .23	43.6 0.9
25.5	45.42 +.23	64.2 +2.2	56.57 +.16	50.7 −1.1	22.74 +.25	56.9 +2.0	10.99 +.20	44.4 +0.8
Nov. 4.5	45.64 .19	66.4 2.2	56.71 .13	51.9 1.3	22.97 .21	59.0 2.0	11.18 .17	45.1 0.7
14.5	45.80 .14	68.6 2.1	56.83 .10	53.2 1.4	23.16 .16	61.0 2.0	11.34 .14	45.8 0.6
24.5	45.91 .09	70.7 2.0	56.91 .06	54.7 1.5	23.30 .11	62.9 1.9	11.46 .11	46.3 0.5
Dec. 4.4	45.98 +.03	72.7 1.9	56.96 +.03	56.2 1.5	23.40 .06	64.8 1.8	11.55 .07	46.7 0.4
14.4	45.98 −.02	74.5 +1.7	56.97 .00	57.7 −1.4	23.43 +.01	66.5 +1.6	11.59 +.03	47.1 +0.3
24.4	45.93 .07	76.0 1.4	56.95 −.04	59.0 1.3	23.41 −.04	68.0 1.4	11.60 −.01	47.3 0.2
34.4	45.84 −.13	77.3 +1.1	56.90 −.07	60.3 −1.2	23.34 −.10	69.3 +1.2	11.57 −.05	47.5 +0.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 47	° ′ +31 33	h m 3 53	° ′ −13 48	h m 4 13	° ′ +15 22	h m 4 22	° ′ +18 56
	s	″	s	″	s	″	s	″
(Dec. 30.4)	24.67 −.04	65.0 +0.6	2.88 −.05	48.1 −1.5	42.70 −.01	14.4 −0.2	22.58 .00	40.8 0.0
Jan. 9.3	24.61 .08	65.5 0.4	2.81 .08	49.5 1.3	42.67 .05	14.2 0.2	22.55 −.04	40.7 0.0
19.3	24.52 .12	65.8 0.2	2.72 .11	50.6 1.0	42.61 .09	13.9 0.2	22.49 .08	40.7 −0.1
29.3	24.39 .15	66.0 +0.1	2.59 .14	51.5 0.7	42.51 .12	13.7 0.2	22.39 .11	40.6 0.1
Feb. 8.3	24.23 .17	65.9 −0.1	2.44 .16	52.1 0.4	42.38 .14	13.5 0.2	22.26 .14	40.4 0.2
18.2	24.05 −.18	65.7 −0.3	2.28 −.17	52.4 −0.2	42.23 −.15	13.2 −0.2	22.11 −.16	40.2 −0.2
28.2	23.87 .18	65.2 0.5	2.11 .17	52.5 +0.1	42.07 .16	13.0 0.2	21.95 .16	40.0 0.2
Mar. 10.2	23.69 .17	64.7 0.6	1.95 .16	52.2 0.4	41.90 .15	12.7 0.2	21.78 .16	39.8 0.2
20.2	23.53 .15	64.0 0.7	1.80 .14	51.6 0.7	41.75 .14	12.5 0.2	21.62 .15	39.5 0.2
30.1	23.39 .12	63.2 0.8	1.66 .12	50.7 1.0	41.62 .12	12.4 −0.1	21.48 .13	39.2 0.2
Apr. 9.1	23.29 −.08	62.4 −0.8	1.56 −.09	49.6 +1.3	41.51 −.09	12.3 0.0	21.37 −.10	39.0 −0.2
19.1	23.24 −.03	61.6 0.8	1.49 −.05	48.2 1.5	41.44 −.05	12.3 +0.1	21.29 .06	38.9 −0.1
29.0	23.23 +.02	60.8 0.7	1.46 .00	46.5 1.8	41.42 .00	12.4 0.2	21.26 −.01	38.8 0.0
May 9.0	23.28 .08	60.2 0.6	1.48 +.04	44.7 2.0	41.44 +.04	12.6 0.3	21.27 +.04	38.8 +0.1
19.0	23.38 .13	59.7 0.4	1.55 .09	42.6 2.1	41.50 .09	13.0 0.5	21.33 .08	39.0 0.2
29.0	23.54 +.18	59.3 −0.2	1.66 +.13	40.4 +2.2	41.61 +.13	13.6 +0.6	21.44 +.13	39.3 +0.4
June 7.9	23.74 .22	59.2 0.0	1.81 .17	38.1 2.3	41.77 .18	14.3 0.8	21.59 .17	39.8 0.5
17.9	23.98 .26	59.3 +0.2	2.00 .21	35.7 2.4	41.97 .22	15.1 0.9	21.79 .21	40.4 0.7
27.9	24.27 .29	59.5 0.4	2.23 .24	33.3 2.3	42.20 .25	16.1 1.0	22.02 .24	41.1 0.8
July 7.9	24.58 .32	60.0 0.6	2.48 .27	31.0 2.2	42.46 .27	17.1 1.1	22.28 .27	41.9 0.9
17.8	24.92 +.34	60.7 +0.8	2.76 +.29	28.9 +2.1	42.75 +.29	18.3 +1.2	22.56 +.29	42.9 +1.0
27.8	25.27 .35	61.5 0.9	3.05 .30	26.9 1.9	43.05 .31	19.4 1.2	22.87 .31	43.9 1.0
Aug. 6.8	25.63 .36	62.5 1.0	3.36 .30	25.2 1.6	43.37 .32	20.6 1.1	23.19 .32	44.9 1.0
16.7	25.99 .36	63.6 1.1	3.66 .30	23.8 1.2	43.69 .32	21.7 1.1	23.51 .32	45.9 1.0
26.7	26.34 .35	64.8 1.2	3.97 .30	22.7 0.9	44.01 .32	22.7 1.0	23.84 .32	46.9 0.9
Sept. 5.7	26.68 +.34	66.0 +1.2	4.26 +.29	22.1 +0.5	44.32 +.31	23.7 +0.9	24.16 +.32	47.7 +0.8
15.7	27.01 .32	67.3 1.2	4.55 .28	21.8 +0.1	44.62 .30	24.5 0.7	24.47 .31	48.5 0.7
25.6	27.33 .30	68.5 1.2	4.81 .26	21.9 −0.3	44.91 .28	25.1 0.6	24.77 .29	49.2 0.6
Oct. 5.6	27.62 .28	69.8 1.2	5.06 .24	22.4 0.7	45.19 .26	25.6 0.4	25.05 .27	49.8 0.5
15.6	27.88 .25	71.0 1.2	5.28 .21	23.3 1.0	45.44 .24	26.0 0.3	25.32 .25	50.2 0.4
25.6	28.12 +.22	72.2 +1.1	5.48 +.18	24.5 −1.3	45.68 +.22	26.2 +0.1	25.57 +.23	50.6 +0.3
Nov. 4.5	28.33 .19	73.3 1.1	5.65 .15	26.0 1.5	45.89 .19	26.2 0.0	25.79 .21	50.8 0.2
14.5	28.50 .16	74.3 1.0	5.79 .12	27.6 1.7	46.07 .16	26.2 −0.1	25.99 .18	50.9 0.1
24.5	28.64 .12	75.3 1.0	5.89 .09	29.4 1.7	46.22 .13	26.1 0.1	26.15 .15	51.0 +0.1
Dec. 4.4	28.74 .08	76.2 0.9	5.96 .05	31.2 1.8	46.33 .10	25.9 0.2	26.27 .11	51.1 0.0
14.4	28.79 +.04	77.0 +0.8	6.00 +.01	32.9 −1.7	46.41 +.06	25.7 −0.2	26.36 +.07	51.1 0.0
24.4	28.81 −.01	77.7 0.7	5.99 −.02	34.6 1.6	46.45 +.02	25.5 0.2	26.41 +.03	51.0 0.0
34.4	28.78 −.05	78.3 +0.5	5.95 −.06	36.1 −1.4	46.45 −.02	25.3 −0.2	26.42 −.01	51.0 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Tauri. (*Aldebaran.*)		α Camelopardalis.		ι Aurigæ.		11 Orionis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 4 29	° ′ +16 17	h m 4 43	° ′ +66 9	h m 4 50	° ′ +32 59	h m 4 58	° ′ +15 15
	s	″	s	″	s	″	s	″
(Dec.30.4)	47.35 +.01	44.3 −0.2	26.13 −.05	50.2 +2.4	2.16 +.02	55.7 +0.8	27.88 +.02	23.2 −0.3
Jan. 9.4	47.34 −.04	44.1 0.2	26.03 .15	52.5 2.2	2.16 −.03	56.4 0.7	27.89 −.02	23.0 0.2
19.4	47.28 .08	43.9 0.2	25.83 .24	54.5 1.9	2.11 .07	57.0 0.6	27.85 .06	22.8 0.2
29.3	47.19 .11	43.7 0.2	25.54 .32	56.2 1.5	2.02 .11	57.5 0.4	27.77 .09	22.6 0.2
Feb. 8.3	47.06 .14	43.5 0.2	25.18 .39	57.4 1.0	1.88 .15	57.9 0.3	27.66 .13	22.4 0.2
18.3	46.91 −.16	43.3 −0.2	24.77 −.43	58.2 +0.5	1.71 −.17	58.1 +0.1	27.52 −.15	22.2 −0.1
28.2	46.75 .17	43.1 0.2	24.33 .45	58.5 0.0	1.53 .19	58.1 −0.1	27.36 .16	22.1 0.1
Mar. 10.2	46.59 .16	42.9 0.2	23.87 .45	58.3 −0.4	1.33 .20	57.9 0.2	27.20 .16	22.0 0.1
20.2	46.43 .15	42.7 0.2	23.43 .42	57.6 0.9	1.14 .18	57.5 0.4	27.03 .16	21.9 −0.1
30.2	46.28 .13	42.6 0.1	23.03 .37	56.5 1.3	0.97 .16	57.0 0.5	26.88 .14	21.8 0.0
Apr. 9.1	46.17 −.10	42.5 −0.1	22.69 −.30	55.0 −1 6	0.82 −.13	56.5 −0.6	26.74 −.12	21.8 0.0
19.1	46.09 .06	42.4 0.0	22.42 .22	53.2 1.9	0.71 .09	55.8 0.7	26.64 .08	21.8 +0.1
29.1	46.05 −.02	42.5 +0.1	22.24 .13	51.2 2.1	0.65 −.04	55.1 0.7	26.58 −.04	21.9 0.2
May 9.1	46.05 +.03	42.7 0.2	22.16 −.03	49.0 2.2	0.63 +.01	54.4 0.7	26.56 .00	22.1 0.3
19.0	46.10 .08	43.0 0.4	22.19 +.07	46.7 2.3	0.67 .06	53.7 0.6	26.58 +.05	22.4 0.4
29.0	46.20 +.12	43.4 +0.5	22.31 +.18	44.4 −2.2	0.76 +.11	53.1 −0.5	26.65 +.09	22.9 +0.5
June 8.0	46.34 .16	44.0 0.7	22.54 .28	42.3 2.1	0.90 .16	52.7 0.4	26.77 .13	23.5 0.6
17.9	46.53 .20	44.7 0.8	22 87 .37	40.2 1.9	1.09 .21	52.3 0.2	26.93 .17	24.1 0.7
27.9	46.75 .24	45.5 0.9	23.28 .45	38.4 1.7	1.32 .25	52.2 −0.1	27.12 .21	24.9 0.8
July 7.9	47.00 .27	46.5 1.0	23.77 .52	36.9 1.4	1.59 .28	52.1 +0.1	27.35 .24	25.8 0.9
17.9	47.28 +.29	47.5 +1.0	24.32 +.58	35.6 −1.1	1.89 +.31	52.2 +0.2	27.61 +.27	26.7 +0.9
27.8	47.58 .30	48.5 1.0	24.93 .62	34.7 0.7	2.21 .33	52.5 0.3	27.89 .29	27.6 0.9
Aug. 6.8	47.89 .31	49.5 1.0	25.58 .66	34.1 −0.4	2.56 .35	52.9 0.4	28.18 .30	28.5 0.9
16.8	48.21 .32	50.6 1.0	26.25 .68	33.9 0.0	2.91 .36	53.4 0.5	28.49 .31	29.4 0.8
26.8	48.53 .32	51.5 0.9	26.94 .69	34.1 +0.3	3.27 .36	53.9 0.6	28.80 .31	30.1 0.7
Sept. 5.7	48.84 +.31	52.3 +0.8	27.63 +.69	34.6 +0.7	3.63 +.36	54.6 +0.7	29.12 +.31	30.8 +0.6
15.7	49.15 .30	53.1 0.6	28.32 .68	35.4 1.0	3.99 .35	55.3 0.7	29.43 .31	31.4 0.5
25.7	49.45 .29	53.6 0.5	28.99 .66	36.6 1.3	4.34 .34	56.0 0.7	29.74 .30	31.8 0.3
Oct. 5.6	49.74 .28	54.1 0.4	29.64 .62	38.0 1.6	4.68 .33	56.7 0.7	30.04 .29	32.0 +0.2
15.6	50.00 .26	54.4 0.2	30.25 .58	39.8 1.9	5.00 .31	57.5 0.8	30.32 .28	32.2 0.0
25.6	50.25 +.24	54.5 +0.1	30.81 +.53	41.8 +2.1	5.30 +.29	58.2 +0.8	30.59 +.26	32.1 −0.1
Nov. 4.6	50.48 .21	54.6 0.0	31.32 .47	44.1 2.3	5.58 .26	59.0 0.8	30.84 .24	32.0 0.2
14.6	50.67 .18	54.5 −0.1	31.75 .40	46.5 2.5	5.82 .23	59.8 0.8	31.06 .21	31.8 0.3
24.5	50.84 .15	54.4 0.1	32.10 .31	49.1 2.6	6.04 .19	60.6 0.8	31.26 .18	31.5 0.3
Dec. 4.5	50.97 .11	54.3 0.2	32.37 .22	51.8 2.6	6.21 .15	61.5 0.8	31.42 .14	31.1 0.3
14.5	51.07 +.07	54.1 −0.2	32.54 +.12	54.5 +2.6	6.34 +.10	62.3 +0.8	31.54 +.10	30 8 −0.3
24.4	51.12 +.03	53.9 0.2	32.61 +.02	57.1 2.5	6.42 +.05	63.1 0.8	31.62 .06	30.5 0.3
34.4	51.13 −.01	53.7 −0.2	32.58 −.09	59.5 +2.4	6.46 .00	63.8 +0.7	31.66 +.02	30.2 −0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Aurigæ. (*Capella.*)		β Orionis. (*Rigel.*)		β Tauri.		Groombridge 966.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 5 8	+45° 53′	h m 5 9	− 8° 19′	h m 5 19	+28° 30′	h m 5 25	+74° 58′
	s	″	s	″	s	″	s	″
(Dec.30.4)	47.97 +.03	29.3 +1.5	24.49 +.02	28.8 −1.6	32.39 +.05	67.8 +0.5	28.84 +.02	31.0 +2.9
Jan. 9.4	47.98 −.03	30.7 1.4	24.49 −.02	30.3 1.4	32.42 .00	68.3 0.5	28.77 −.14	33.8 2.7
19.4	47.92 .08	32.0 1.2	24.45 .06	31.6 1.2	32.40 −.05	68.7 0.4	28.55 .30	36.4 2.5
29.4	47.82 .13	33.1 1.0	24.37 .10	32.7 1.0	32.33 .09	69.1 0.4	28.17 .44	38.7 2.1
Feb. 8.3	47.66 .18	34.0 0.7	24.25 .13	33.6 0.8	32.22 .13	69.5 0.3	27.66 .56	40.6 1.7
18.3	47.46 −.21	34.6 +0.4	24.11 −.15	34.2 −0.5	32.08 −.16	69.7 +0.2	27.04 −.65	42.0 +1.2
28.3	47.23 .23	34.9 +0.1	23.94 .17	34.6 −0.2	31.91 .18	69.8 +0.1	26.35 .71	43.0 0.7
Mar. 10.2	46.99 .24	34.9 −0.2	23.77 .17	34.7 0.0	31.73 .19	69.8 −0.1	25.62 .74	43.3 +0.1
20.2	46.75 .23	34.6 0.5	23.60 .16	34.6 +0.2	31.54 .18	69.7 0.2	24.88 .72	43.2 −0.4
30.2	46.52 .21	34.0 0.7	23.44 .15	34.2 0.5	31.36 .16	69.4 0.3	24.18 .67	42.5 0.9
Apr. 9.2	46.33 −.18	33.1 −0.9	23.29 −.13	33.5 +0.8	31.21 −.14	69.1 −0.4	23.54 −.59	41.3 −1.4
19.1	46.17 .13	32.1 1.1	23.17 .10	32.7 1.0	31.08 .10	68.7 0.4	22.99 .49	39.7 1.8
29.1	46.06 .08	30.9 1.2	23.09 .06	31.5 1.2	31.00 .06	68.2 0.4	22.56 .36	37.7 2.1
May 9.1	46.01 −.02	29.6 1.3	23.05 −.02	30.2 1.4	30.96 −.02	67.8 0.4	22.26 .22	35.4 2.3
19.1	46.03 +.04	28.3 1.3	23.05 +.02	28.7 1.6	30.97 +.03	67.4 0.4	22.11 −.07	32.9 2.5
29.0	46.10 +.10	27.0 −1.3	23.09 +.06	27.0 +1.8	31.02 +.08	67.0 −0.3	22.12 +.08	30.4 −2.6
June 8.0	46.24 .16	25.7 1.2	23.17 .10	25.2 1.9	31.13 .13	66.7 0.2	22.28 .23	27.7 2.6
18.0	46.43 .22	24.5 1.1	23.30 .14	23.2 2.0	31.28 .17	66.5 −0.1	22.60 .38	25.2 2.5
27.9	46 67 .27	23.5 0.9	23.46 .18	21.2 2.0	31.48 .21	66.5 0.0	23.05 .52	22.8 2.3
July 7.9	46.97 .31	22.7 0.7	23.66 .21	19.2 2.0	31.71 .25	66.5 +0.1	23.64 .65	20.5 2.1
17.9	47.30 +.35	22.0 −0.5	23.89 +.24	17.3 +1.9	31.98 +.28	66.6 +0.2	24.35 +.76	18.5 −1.8
27.9	47.67 .38	21.6 0.3	24.14 .26	15.5 1.7	32.27 .30	66.8 0.2	25.15 .85	16.8 1.5
Aug. 6.8	48.06 .40	21.3 −0.1	24.41 .28	13.9 1.5	32.58 .32	67.1 0.3	26 05 .93	15.4 1.2
16.8	48.47 .41	21.3 0.0	24.70 .30	12.5 1.3	32.91 .33	67.4 0.3	27.01 .99	14.4 0.8
26.8	48.89 .42	21.4 +0.2	24.99 .29	11.4 1.0	33.25 .34	67.8 0.4	28.02 1.03	13.7 −0.4
Sept. 5.8	49.31 +.42	21.7 +0.4	25.28 +.30	10.6 +0.6	33.59 +.34	68.2 +0.4	29.07+1.05	13.5 0.0
15.7	49.74 .42	22.2 0.6	25.58 .30	10.2 +0.2	33.94 .34	68.6 0.4	30.13 1.06	13.6 +0.4
25.7	50.16 .41	22.8 0.7	25.87 .29	10.1 −0.1	34.28 .34	69.0 0.4	31.19 1.05	14.2 0.7
Oct. 5.7	50.58 .40	23.6 0.9	26.16 .28	10.4 0.5	34.61 .33	69.4 0.4	32.23 1.02	15.1 1.1
15.6	50.97 .38	24.5 1.0	26.43 .26	11.1 0.8	34.94 .32	69.7 0.4	33.23 .98	16.4 1.5
25.6	51.34 +.36	25.6 +1.1	26.68 +.24	12.1 −1.1	35.25 +.30	70.1 +0.4	34.17 +.91	18.1 +1.9
Nov. 4.6	51.69 .33	26.8 1.3	26.92 .22	13.3 1.4	35.54 .28	70.4 0.4	35.04 .82	20.1 2.2
14.6	52.00 .29	28.2 1.4	27.13 .20	14.8 1.6	35.81 .25	70.8 0.4	35.81 .71	22.5 2.5
24.5	52.27 .25	29.6 1.4	27.31 .17	16.5 1.7	36.04 .22	71.2 0.4	36.46 .59	25.1 2.7
Dec. 4.5	52.50 .20	31.0 1.5	27.46 .13	18.2 1.7	36.24 .18	71.6 0.4	36.99 .45	27.9 2.8
14.5	52.67 +.14	32.6 +1.5	27.57 +.09	20.0 −1.7	36.40 +.14	72.0 +0.4	37.36 +.29	30.8 +2.9
24.5	52.78 .08	34.1 1.5	27.64 +.05	21.7 1.6	36.51 .09	72.4 0.5	37.57 +.13	33.7 2.9
34.4	52.84 +.02	35.5 +1.4	27.67 .00	23.3 −1.6	36.58 +.04	72.9 +0.5	37.62 −.03	36.6 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ε Orionis.		α Columbæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 5 26	° ′ − 0 22	h m 5 27	° ′ −17 53	h m 5 30	° ′ − 1 15	h m 5 35	° ′ −34 7
	s	″	s	″	s	″	s	″
(Dec.30.4)	33.14 +.04	38.6 −1.2	61.56 +.02	54.0 −2.1	47.77 +.04	69.4 −1.3	47.75 +.01	51.0 −2.8
Jan. 9.4	33.16 .00	39.7 1.1	61.56 −.02	56.0 1.9	47.80 .00	70.6 1.2	47.73 −.04	53.7 2.5
19.4	33.14 −.04	40.8 1.0	61.52 .06	57.8 1.7	47.78 −.04	71.7 1.0	47.66 .09	56.1 2.2
29.4	33.08 .08	41.6 0.8	61.44 .10	59.3 1.4	47.72 .08	72.6 0.8	47.55 .14	58.1 1.9
Feb. 8.3	32.98 .12	42.3 0.6	61.32 .13	60.5 1.1	47.62 .11	73.3 0.6	47.39 .18	59.8 1.5
18.3	32.85 −.14	42.8 −0.4	61.17 −.16	61.4 −0.7	47.49 −.14	73.8 −0.4	47.20 −.21	61.0 −1.0
28.3	32.70 .16	43.2 −0.2	60.99 .18	62.0 −0.4	47.34 .16	74.2 −0.2	46.98 .23	61.8 0.6
Mar. 10.2	32.53 .17	43.3 0.0	60.81 .19	62.3 0.0	47.17 .17	74.4 0.0	46.74 .24	62.2 −0.1
20.2	32.36 .16	43.3 +0.1	60.61 .18	62.2 +0.3	47.00 .17	74.4 +0.1	46.51 .23	62.1 +0.3
30.2	32.20 .15	43.1 0.3	60.43 .17	61.7 0.6	46.84 .16	74.1 0.3	46.27 .22	61.6 0.8
Apr. 9.2	32.06 −.13	42.7 +0.5	60.27 −.15	60.9 +0.9	46.69 −.14	73.7 +0.5	46.06 −.20	60.6 +1.2
19.1	31.94 .10	42.1 0.7	60.13 .12	59.9 1.2	46.57 .11	73.2 0.7	45.87 .17	59.2 1.6
29.1	31.85 .07	41.4 0.8	60.02 .09	58.5 1.5	46.48 .07	72.4 0.9	45.72 .13	57.5 1.9
May 9.1	31.80 −.03	40.5 1.0	59.95 .05	56.9 1.8	46.43 −.03	71.4 1.0	45.60 .09	55.4 2.2
19.1	31.79 +.01	39.4 1.2	59.92 −.01	55.0 2.0	46.41 +.01	70.3 1.2	45.54 −.05	53.0 2.5
29.0	31.82 +.05	38.2 +1.3	59.93 +.03	52.9 +2.2	46.45 +.05	69.0 +1.3	45.51 .00	50.3 +2.7
June 8.0	31.90 .10	36.8 1.4	59.99 .08	50.7 2.3	46.52 .09	67.6 1.4	45.54 +.05	47.5 2.9
18.0	32.02 .14	35.3 1.5	60.09 .12	48.4 2.4	46.63 .13	66.2 1.5	45.62 .10	44.6 2.9
28.0	32.18 .17	33.8 1.5	60.23 .16	46.0 2.4	46.78 .17	64.6 1.6	45.74 .14	41.6 3 0
July 7.9	32.36 .20	32.2 1.5	60.41 .19	43.6 2.3	46.97 .20	63.0 1.6	45.90 .18	38.7 2.9
17.9	32.58 +.23	30.7 +1.5	60.62 +.22	41.4 +2.2	47.18 +.23	61.4 +1.5	46.10 +.22	35.9 +2.7
27.9	32.83 .25	29.3 1.4	60.85 .25	39.2 2.0	47.42 .25	60.0 1.4	46.34 .25	33.3 2.5
Aug. 6.8	33.09 .27	27.9 1.3	61.11 .27	37.3 1.8	47.68 .27	58.6 1.3	46.60 .28	31.0 2.2
16.8	33.37 .28	26.7 1.1	61.39 .28	35.7 1.5	47.96 .28	57.4 1.1	46.89 .30	29.0 1.8
26.8	33.66 .29	25.8 0.9	61.68 .29	34.4 1.1	48.25 .29	56.4 0.9	47.20 .31	27.5 1.3
Sept. 5.8	33.95 +.29	25.1 +0.6	61.97 +.30	33.6 +0.7	48.54 +.29	55.7 +0.6	47.52 +.32	26.5 +0.8
15.7	34.25 .30	24.6 +0.3	62.27 .30	33.1 +0.2	48.84 .30	55.3 +0.3	47.84 .32	26.0 +0.2
25.7	34.55 .29	24.5 0.0	62.57 .30	33.1 −0.2	49.13 .29	55.2 0.0	48.17 .32	26.0 −0.3
Oct. 5.7	34.84 .28	24.7 −0.3	62.87 .29	33.6 0.7	49.43 .29	55.4 −0.3	48.49 .31	26.6 0.9
15.7	35.12 .27	25.2 0.6	63.15 .28	34.5 1.1	40.71 .28	55.9 0.6	48.80 .30	27.8 1.4
25.6	35.39 +.26	25.9 −0.8	63.42 +.26	35.8 −1.5	49.98 +.26	56.7 −0.9	49.09 +.28	29.5 −1.9
Nov. 4.6	35.64 .24	26.9 1.0	63.67 .24	37.4 1.8	50.24 .24	57.7 1.1	49.36 .25	31.6 2.3
14.6	35.87 .22	28.0 1.2	63.89 .21	39.3 2.0	50.47 .22	58.9 1.3	49.60 .22	34.1 2.6
24.5	36.08 .19	29.3 1.3	64.09 .18	41.5 2.2	50.67 .19	60.2 1.4	49.80 .18	36.8 2.8
Dec. 4.5	36.25 .15	30.6 1.3	64.25 .14	43.7 2.3	50.85 .16	61.6 1.4	49.96 .14	39.7 2.9
14.5	36.38 +.11	32.0 −1.3	64.37 +.10	46.0 −2.3	50.99 +.12	63.1 −1.4	50.08 +.09	42.7 −3.0
24.5	36.48 .07	33.3 1.3	64.45 .06	48.3 2.2	51.09 .08	64.5 1.4	50.14 +.04	45.7 2.9
34.4	36.53 +.03	34.6 −1.2	64.48 +.01	50.4 −2.0	51.14 +.03	65.8 −1.3	50.16 −.01	48.5 −2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		ν Orionis.		22 Camelop. (H.)		μ Geminorum.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$5^h\ 49^m$	$+7°\ 23'$	$6^h\ 1^m$	$+14°\ 46'$	$6^h\ 7^m$	$+69°\ 21'$	$6^h\ 16^m$	$+22°\ 34'$
(Dec. 30.5)	^{s}23.47 +.07	″18.0 −0.8	^{s}28.59 +.09	″57.2 −0.4	^{s}5.72 +.16	″32.5 +2.7	^{s}30.09 +.11	″11.3 0.0
Jan. 9.5	23.52 +.03	17.2 0.7	28.66 +.04	56.8 0.3	5.81 +.03	35.2 2.6	30.17 .06	11.4 +0.1
19.4	23.53 −.02	16.5 0.6	28.68 −.01	56.5 0.2	5.77 −.10	37.8 2.4	30.21 +.01	11.5 0.2
29.4	23.49 .06	15.9 0.5	28.65 .05	56.3 0.2	5.61 .22	40.1 2.2	30.19 −.04	11.7 0.2
Feb. 8.4	23.40 .10	15.5 0.4	28.58 .09	56.1 −0.1	5.34 .32	42.2 1.9	30.13 .09	11.9 0.2
18.4	23.29 −.13	15.1 −0.3	28.47 −.12	56.1 0.0	4.97 −.41	44.0 +1.5	30.02 −.13	12.1 +0.2
28.3	23.15 .15	14.9 0.2	28.33 .15	56.0 0.0	4.53 .48	45.3 1.1	29.89 .15	12.3 0.2
Mar. 10.3	22.98 .16	14.8 −0.1	28.17 .17	56.0 0.0	4.03 .51	46.1 0.6	29.73 .17	12.5 0.2
20.3	22.82 .17	14.8 +0.1	28.00 .17	56.1 0.0	3.51 .52	46.5 +0.1	29.55 .18	12.6 0.1
30.3	22.65 .16	14.9 0.2	27.83 .16	56.1 +0.1	2.99 .51	46.3 −0.4	29.38 .17	12.7 +0.1
Apr. 9.2	22.50 −.14	15.1 +0.3	27.67 −.14	56.2 +0.1	2.50 −.47	45.7 −0.8	29.21 −.15	12.7 0.0
19.2	22.37 .11	15.4 0.4	27.54 .12	56.3 0.1	2.05 .41	44.6 1.2	29.07 .13	12.7 0.0
29.2	22.28 .09	15.8 0.5	27.43 .09	56.5 0.2	1.68 .33	43.1 1.6	28.95 .10	12.7 −0.1
May 9.2	22.22 −.04	16.4 0.6	27.37 .05	56.7 0.2	1.40 .23	41.3 1.9	28.87 .06	12.6 0.1
19.1	22.19 .02	17.1 0.7	27.34 −.01	57.0 0.3	1.22 .13	39.2 2.2	28.83 −.02	12.5 −0.1
29.1	22.21 +.04	17.8 +0.8	27.35 +.03	57.3 +0.4	1.15 −.02	36.9 −2.3	28.83 +.02	12.4 0.0
June 8.1	22.28 .08	18.7 0.9	27.41 .08	57.8 0.5	1.19 +.10	34.5 2.4	28.88 .07	12.4 0.0
18.0	22.38 .12	19.6 1.0	27.51 .12	58.3 0.5	1.34 .21	32.1 2.4	28.97 .11	12.4 0.0
28.0	22.52 .16	20.6 1.0	27.65 .15	58.8 0.6	1.60 .31	29.7 2.4	29.10 .15	12.4 +0.1
July 8.0	22.70 .19	21.7 1.0	27.82 .19	59.4 0.6	1.97 .40	27.4 2.3	29.27 .19	12.5 0.1
18.0	22.91 +.22	22.8 +1.0	28.03 +.22	60.0 +0.6	2.42 +.48	25.2 −2.1	29.48 +.22	12.6 +0.1
27.9	23.14 .24	23.8 1.0	28.26 .25	60.7 0.6	2.96 .57	23.2 1.9	29.71 .25	12.7 0.1
Aug. 6.9	23.40 .26	24.8 0.9	28.52 .27	61.2 0.6	3.57 .64	21.5 1.6	29.97 .27	12.9 0.1
16.9	23.67 .28	25.7 0.8	28.79 .28	61.8 0.5	4.24 .70	20.0 1.3	30.25 .29	13.0 0.1
26.8	23.96 .29	26.4 0.6	29.09 .30	62.2 0.4	4.96 .74	18.8 1.0	30.55 .31	13.1 +0.1
Sept. 5.8	24.26 +.30	26.9 +0.4	29.39 +.31	62.6 +0.3	5.72 +.77	18.0 −0.7	30.86 +.32	13.2 0.0
15.8	24.56 .30	27.2 +0.2	29.70 .31	62.8 +0.1	6.50 .79	17.5 −0.3	31.18 .33	13.1 0.0
25.8	24.86 .30	27.3 0.0	30.01 .31	62.8 0.0	7.30 .80	17.4 0.0	31.51 .33	13.1 −0.1
Oct. 5.7	25.16 .29	27.2 −0.2	30.33 .31	62.7 −0.2	8.11 .80	17.6 +0.4	31.85 .33	12.9 0.2
15.7	25.46 .30	26.8 0.4	30.64 .31	62.4 0.3	8.90 .78	18.2 0.8	32.18 .33	12.7 0.3
25.7	25.75 +.28	26.3 −0.6	30.94 +.30	62.0 −0.4	9.67 +.75	19.2 +1.1	32.50 +.32	12.4 −0.3
Nov. 4.7	26.02 .26	25.6 0.8	31.23 .28	61.5 0.5	10.39 .70	20.5 1.5	32.82 .31	12.1 0.3
14.6	26.28 .24	24.7 0.9	31.51 .26	60.9 0.6	11.06 .64	22.1 1.8	33.11 .29	11.7 0.3
24.6	26.51 .21	23.7 1.0	31.76 .23	60.3 0.6	11.67 .56	24.1 2.1	33.39 .26	11.4 0.3
Dec. 4.6	26.71 .18	22.8 1.0	31.98 .20	59.7 0.6	12.18 .46	26.3 2.3	33.64 .23	11.2 0.2
14.5	26.87 +.14	21.8 −1.0	32.16 +.16	59.1 −0.6	12.59 +.35	28.7 +2.5	33.85 +.19	11.0 −0.1
24.5	27.00 .10	20.8 0.9	32.30 .12	58.6 0.5	12.89 .23	31.3 2.6	34.02 .14	10.9 −0.1
34.5	27.08 +.06	19.9 −0.8	32.40 +.07	58.1 −0.4	13.07 +.11	34.0 +2.7	34.14 +.09	10.9 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Argûs. (*Canopus.*)		γ Geminorum.		α Canis Majoris. (*Sirius.*)		ε Canis Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 6 21	° ′ −52 37	h m 6 31	° ′ +16 29	h m 6 40	° ′ −16 33	h m 6 54	° ′ −28 49
	s	″	s	″	s	″	s	″
(Dec. 30.5)	36.61 +.01	68.9 −3.5	32.65 +.12	30.8 −0.4	27.04 +.10	63.9 −2.4	26.32 +.10	29.5 −2.9
Jan. 9.5	36.59 −.06	72.3 3.3	32.75 .07	30.4 0.3	27.12 +.05	66.2 2.2	26.39 +.05	32.4 2.8
19.4	36.50 .12	75.4 3.0	32.79 +.02	30.2 0.2	27.14 .00	68.3 2.0	26.42 .00	35.1 2.6
29.4	36.34 .19	78.2 2.6	32.79 −.03	30.0 −0.1	27.12 −.05	70.2 1.8	26.39 −.05	37.6 2.3
Feb. 8.4	36.12 .25	80.7 2.2	32.74 .07	30.0 0.0	27.05 .09	71.8 1.5	26.31 .10	39.7 2.0
18.4	35.85 −.29	82.7 −1.7	32.65 −.11	30.0 0.0	26.94 −.13	73.1 −1.2	26.18 −.14	41.5 −1.6
28.3	35.54 .32	84.2 1.2	32.52 .14	30.0 +0.1	26.80 .16	74.2 0.9	26.02 .17	43.0 1.2
Mar. 10.3	35.20 .35	85.2 0.7	32.37 .16	30.1 0.1	26.63 .18	74.9 0.5	25.84 .19	44.0 0.8
20.3	34.85 .36	85.7 −0.2	32.21 .17	30.2 0.1	26.45 .19	75.2 −0.2	25.63 .21	44.7 −0.4
30.3	34.49 .35	85.7 +0.3	32.04 .16	30.4 0.1	26.26 .18	75.3 +0.1	25.41 .21	44.9 0.0
Apr. 9.2	34.14 −.34	85.1 +0.8	31.88 −.15	30.5 +0.1	26.08 −.17	75.0 +0.4	25.20 −.20	44.7 +0.4
19.2	33.82 .31	84.1 1.3	31.73 .13	30.6 0.1	25.91 .15	74.5 0.7	25.01 .19	44.1 0.8
29.2	33.53 .27	82.6 1.8	31.61 .10	30.8 0.2	25.77 .13	73.6 1.0	24.83 .16	43.2 1.2
May 9.2	33.27 .23	80.6 2.2	31.53 .07	31.0 0.2	25.65 .10	72.4 1.3	24.68 .13	41.9 1.5
19.1	33.07 .18	78.3 2.5	31.47 −.03	31.2 0.2	25.57 .06	71.0 1.5	24.56 .10	40.2 1.8
29.1	32.93 −.12	75.6 +2.8	31.46 +.01	31.4 +0.2	25.53 −.02	69.4 +1.7	24.48 −.06	38.3 +2.1
June 8.1	32.84 −.06	72.7 3.0	31.49 .05	31.7 0.3	25.52 +.02	67.6 1.9	24.44 −.02	36.1 2.3
18.0	32.81 .00	69.5 3.2	31.57 .09	32.0 0.3	25.55 .05	65.6 2.0	24.45 +.02	33.7 2.5
28.0	32.84 +.06	66.3 3.3	31.68 .13	32.3 0.4	25.63 .09	63.5 2.1	24.49 .06	31.2 2.6
July 8.0	32.94 .12	63.0 3.3	31.83 .16	32.7 0.4	25.73 .13	61.4 2.1	24.58 .10	28.6 2.6
18.0	33.09 +.18	59.7 +3.2	32.01 +.19	33.1 +0.4	25.88 +.16	59.4 +2.0	24.70 +.14	26.0 +2.5
27.9	33.29 .23	56.7 3.0	32.22 .22	33.5 0.4	26.05 .19	57.4 1.9	24.86 .18	23.5 2.4
Aug. 6.9	33.55 .28	53.8 2.7	32.46 .25	33.9 0.3	26.26 .22	55.5 1.7	25.05 .21	21.2 2.2
16.9	33.85 .32	51.4 2.3	32.72 .27	34.2 0.3	26.48 .24	53.9 1.5	25.27 .24	19.1 1.9
26.8	34.19 .36	49.3 1.8	33.00 .29	34.4 0.2	26.73 .26	52.6 1.2	25.52 .26	17.4 1.6
Sept. 5.8	34.56 +.38	47.8 +1.2	33.29 +.30	34.5 +0.1	27.00 +.28	51.6 +0.8	25.79 +.28	16.0 +1.2
15.8	34.96 .40	46.9 +0.6	33.60 .31	34.5 −0.1	27.29 .29	51.0 +0.4	26.09 .30	15.1 0.7
25.8	35.37 .41	46.5 0.0	33.91 .32	34.3 0.2	27.58 .30	50.8 0.0	26.39 .31	14.7 +0.1
Oct. 5.7	35.78 .41	46.8 −0.6	34.23 .32	34.0 0.4	27.88 .30	51.1 −0.5	26.71 .32	14.9 −0.4
15.7	36.19 .40	47.8 1.3	34.55 .32	33.6 0.5	28.18 .30	51.8 0.9	27.03 .32	15.6 0.9
25.7	36.58 +.38	49.4 −1.9	34.87 +.31	33.1 −0.6	28.48 +.29	53.0 −1.3	27.35 +.31	16.8 −1.4
Nov. 4.7	36.94 .35	51.5 2.4	35.18 .30	32.5 0.6	28.78 .28	54.6 1.7	27.66 .30	18.5 1.9
14.6	37.27 .31	54.1 2.8	35.47 .28	31.8 0.7	29.05 .26	56.4 2.0	27.96 .28	20.6 2.3
24.6	37.56 .26	57.1 3.2	35.75 .26	31.1 0.7	29.30 .24	58.6 2.2	28.23 .25	23.0 2.6
Dec. 4.6	37.78 .20	60.5 3.4	36.00 .23	30.4 0.7	29.53 .21	60.9 2.4	28.47 .22	25.8 2.8
14.5	37.95 +.13	64.0 −3.5	36.22 +.19	29.8 −0.6	29.73 +.17	63.4 −2.4	28.67 +.18	28.7 −2.9
24.5	38.04 +.06	67.5 3.5	36.39 .15	29.2 0.5	29.88 .13	65.8 2.4	28.83 .13	31.7 3.0
34.5	38.07 −.01	71.0 −3.5	36.52 +.11	28.8 −0.4	29.98 +.06	68.2 −2.3	28.94 +.08	34.6 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Canis Majoris.		δ Geminorum.		Piazzi vii. 67.		α² Geminorum. (*Castor.*)	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 4	° ′ −26 13	h m 7 13	° ′ +22 10	h m 7 19	° ′ +68 40	h m 7 27	° ′ +32 7
	s	″	s	″	s	″	s	″
(Dec. 30.5)	3.43 +.11	17.1 −2.9	44.84 +.17	49.3 −0.2	47.82 +.34	64.5 +2.5	47.42 +.20	26.8 +0.3
Jan. 9.5	3.52 .06	19.9 2.7	44.99 .12	49.1 0.0	48.11 .22	67.0 2.6	47.60 .14	27.2 0.5
19.5	3.55 +.01	22.5 2.5	45.08 .06	49.1 +0.1	48.27 +.09	69.6 2.6	47.71 .09	27.8 0.7
29.5	3.54 −.04	24.9 2.3	45.12 +.01	49.3 0.2	48.30 −.03	72.2 2.5	47.77 +.03	28.5 0.8
Feb. 8.4	3.48 .09	27.1 2.0	45.10 −.04	49.5 0.3	48.20 .15	74.7 2.4	47.77 −.03	29.3 0.8
18.4	3.37 −.13	28.9 −1.6	45.05 −.08	49.8 +0.3	47.99 −.26	77.0 +2.2	47.72 −.08	30.1 +0.8
28.4	3.22 .16	30.3 1.2	44.94 .12	50.2 0.4	47.68 .35	79.0 1.9	47.61 .12	30.9 0.8
Mar. 10.3	3.04 .18	31.4 0.8	44.81 .15	50.6 0.4	47.28 .42	80.7 1.5	47.47 .15	31.7 0.7
20.3	2.85 .20	32.1 0.5	44.65 .16	50.9 0.3	46.83 .47	81.9 1.0	47.31 .17	32.3 0.6
30.3	2.64 .21	32.4 −0.1	44.48 .17	51.2 0.3	46.34 .49	82.6 +0.5	47.13 .18	32.8 0.4
Apr. 9.3	2.44 −.20	32.2 +0.3	44.31 −.17	51.4 +0.2	45.85 −.49	82.9 0.0	46.94 −.18	33.2 +0.3
19.2	2.25 .18	31.8 0.7	44.15 .15	51.6 0.2	45.37 .48	82.6 −0.5	46.76 .17	33.3 +0.1
29.2	2.08 .16	30.9 1.0	44.01 .13	51.7 0.1	44.93 .41	81.9 0.9	46.60 .15	33.3 −0.1
May 9.2	1.93 .13	29.7 1.4	43.90 .10	51.8 +0.1	44.55 .35	80.8 1.3	46.47 .12	33.2 0.2
19.1	1.81 .10	28.2 1.7	43.82 .06	51.8 0.0	44.24 .27	79.2 1.7	46.37 .08	32.9 0.3
29.1	1.73 −.06	26.4 +1.9	43.78 −.02	51.8 0.0	44.02 −.18	77.4 −2.0	46.31 −.04	32.5 −0.4
June 8.1	1.69 −.02	24.3 2.1	43.78 +.02	51.7 0.0	43.89 −.06	75.2 2.2	46.29 .00	32.0 0.5
18.1	1.69 +.02	22.1 2.3	43.81 .06	51.7 −0.1	43.86 +.02	72.8 2.4	46.32 +.04	31.4 0.6
28.0	1.73 .06	19.7 2.4	43.89 .10	51.6 0.1	43.93 .12	70.3 2.5	46.38 .08	30.7 0.7
July 8.0	1.81 .10	17.3 2.5	44.00 .13	51.5 0.1	44.10 .22	67.8 2.5	46.49 .12	30.0 0.7
18.0	1.92 +.13	14.9 +2.4	44.15 +.16	51.4 −0.1	44.37 +.31	65.2 −2.5	46.64 +.16	29.3 −0.7
28.0	2.07 .17	12.4 2.3	44.33 .20	51.3 0.1	44.72 .40	62.7 2.5	46.82 .20	28.5 0.7
Aug. 6.9	2.26 .20	10.1 2.1	44.54 .22	51.1 0.2	45.16 .48	60.3 2.4	47.03 .23	27.7 0.8
16.9	2.47 .23	8.1 1.8	44.77 .24	50.9 0.2	45.68 .55	58.0 2.2	47.27 .26	26.9 0.8
26.9	2.71 .25	6.5 1.5	45.04 .27	50.7 0.3	46.27 .61	55.9 2.0	47.55 .28	26.1 0.8
Sept. 5.9	2.97 +.27	5.2 +1.1	45.32 +.29	50.3 −0.4	46.91 +.67	54.1 −1.7	47.84 +.30	25.3 −0.8
15.8	3.26 .29	4.3 0.6	45.62 .31	49.9 0.5	47.60 .71	52.5 1.4	48.16 .32	24.5 0.8
25.8	3.56 .30	3.9 +0.1	45.93 .32	49.4 0.6	48.33 .75	51.2 1.1	48.49 .34	23.6 0.8
Oct. 5.8	3.87 .31	4.0 −0.4	46.25 .33	48.8 0.6	49.10 .77	50.3 0.8	48.84 .36	22.8 0.8
15.7	4.18 .32	4.6 0.9	46.59 .34	48.1 0.7	49.88 .78	49.7 −0.4	49.21 .37	22.0 0.8
25.7	4.50 +.31	5.8 −1.4	46.93 +.34	47.4 −0.7	50.67 +.78	49.5 0.0	49.58 +.37	21.3 −0.7
Nov. 4.7	4.81 .30	7.4 1.8	47.26 .33	46.6 0.7	51.45 .76	49.7 +0.4	49.94 .37	20.6 0.6
14.7	5.11 .28	9.4 2.2	47.59 .32	45.9 0.7	52.20 .73	50.4 0.8	50.31 .36	20.1 0.5
24.6	5.39 .26	11.8 2.5	47.91 .30	45.2 0.7	52.91 .68	51.4 1.2	50.66 .34	19.6 0.3
Dec. 4.6	5.64 .23	14.4 2.7	48.20 .28	44.5 0.6	53.55 .61	52.8 1.6	50.99 .31	19.4 −0.2
14.6	5.86 +.19	17.3 −2.8	48.47 +.24	44.0 −0.5	54.12 +.52	54.6 +1.9	51.29 +.27	19.3 0.0
24.6	6.02 .14	20.2 2.9	48.69 .20	43.6 0.3	54.60 .42	56.7 2.2	51.54 .23	19.4 +0.2
34.5	6.15 +.09	23.1 −2.9	48.87 +.15	43.4 −0.2	54.96 +.31	59.1 +2.5	51.75 +.18	19.7 +0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Minoris. (*Procyon.*)		β Geminorum. (*Pollux.*)		φ Geminorum.		3 Ursæ Majoris (H.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 7 33	° ′ + 5 29	h m 7 38	° ′ +28 16	h m 7 46	° ′ +27 2	h m 8 2	° ′ +68 47
	s	″	s	″	s	″	s	″
(Dec.30.5)	42.88 +.17	62.2 −1.3	47.05 +.20	67.3 +0.1	57.86 +.21	36.5 0.0	12.99 +.45	18.5 +2.2
Jan. 9.5	43.03 .12	60.9 1.2	47.23 .15	67.4 0.2	58.05 .15	36.6 +0.1	13.38 .33	20.8 2.4
19.5	43.13 .07	59.8 1.0	47.35 .10	67.7 0.4	58.18 .10	36.8 0.2	13.65 .20	23.3 2 5
29.5	43.17 +.02	58.8 0.8	47.42 +.04	68.2 0.5	58.25 +.05	37.2 0.4	13.79 +.07	25.9 2.6
Feb. 8.4	43.17 −.02	58.1 0.6	47.43 −.01	68.8 0.6	58.27 .00	37.7 0.5	13.80 −.06	28.5 2.6
18.4	43.13 −.06	57.5 −0.5	47.39 −.06	69.4 +0.7	58.24 −.05	38.3 +0.6	13.69 −.17	31.0 +2.4
28.4	43.04 .10	57.1 0.3	47.30 .11	70.1 0.7	58.16 .09	38.9 0.6	13.46 .27	33.3 2.2
Mar. 10.3	42.92 .13	56.9 −0.2	47.17 .14	70.8 0.6	58.04 .13	39.6 0.6	13.14 .36	35.4 1.9
20.3	42.78 .15	56.8 0.0	47.02 .16	71.4 0.5	57.90 .16	40.2 0.5	12.74 .43	37.0 1.5
30.3	42.62 .16	56.8 +0.1	46.85 .17	71.9 0.4	57.73 .17	40.7 0.4	12.29 .47	38.3 1.0
Apr. 9.3	42.46 −.16	57.0 +0.2	46.67 −.17	72.3 +0.3	57.56 −.17	41.1 +0.3	11.80 −.49	39.0 +0.5
19.2	42.31 .15	57.3 0.3	46.50 .16	72.5 +0.2	57.39 .16	41.4 0.2	11.32 .48	39.3 0.0
29.2	42.17 .13	57.6 0.4	46.34 .14	72.6 0.0	57.24 .14	41.6 +0.1	10.85 .45	39.1 −0.5
May 9.2	42.05 .10	58.1 0.5	46.21 .12	72.6 −0.1	57.11 .11	41.7 0.0	10.42 .40	38.4 0.9
19.2	41.97 .07	58.6 0.6	46.11 .08	72.5 0.2	57.00 .08	41.6 −0.1	10.05 .34	37.2 1.3
29.1	41.91 −.04	59.2 +0.6	46.05 −.04	72.3 −0.3	56.93 −.05	41.4 −0.2	9.74 −.26	35.7 −1.7
June 8.1	41.88 −.01	59.9 0.7	46.02 −.01	72.0 0.4	56.90 −.01	41.2 0.3	9.53 .17	33.8 2.0
18.1	41.89 +.03	60.6 0.7	46.03 +.03	71.6 0.4	56.91 +.03	40.9 0.4	9.40 −.06	31.6 2.3
28.0	41.94 .06	61.4 0.8	46.08 .07	71.1 0.5	56.95 .06	40.5 0.4	9.36 +.01	29.2 2.5
July 8.0	42.02 .10	62.2 0.8	46.17 .11	70.6 0.5	57.04 .10	40.1 0.4	9.43 .11	26.6 2.6
18.0	42.13 +.13	63.0 +0.8	46.30 +.14	70.1 −0.6	57.16 +.14	39.6 −0.5	9.58 +.20	23.9 −2.7
28.0	42.28 .16	63.7 0.7	46.47 .18	69.5 0.6	57.31 .17	39.0 0.6	9.83 .29	21.2 2.7
Aug. 6.9	42.45 .18	64.4 0.6	46.66 .21	68.9 0.6	57.50 .20	38.4 0.6	10.16 .38	18.5 2.7
16.9	42.64 .21	64.9 0.5	46.88 .24	68.2 0.7	57.71 .23	37.8 0.7	10.58 .46	15.8 2.6
26.9	42.86 .23	65.3 0.3	47.13 .26	67.5 0.7	57.95 .25	37.1 0.7	11.07 .53	13.3 2.5
Sept. 5.9	43.11 +.25	65.5 +0.1	47.41 +.29	66.7 −0.8	58.22 +.28	36.3 −0.8	11.63 +.59	10.9 −2.3
15.8	43.37 .27	65.4 −0.2	47.71 .31	65.9 0.8	58.51 .30	35.5 0.8	12 26 .65	8.8 2.0
25.8	43.65 .29	65.1 0.4	48.02 .33	65.1 0.9	58.82 .32	34.6 0.9	12.94 .70	6.9 1.7
Oct. 5.8	43.95 .30	64.6 0.6	48.36 .34	64.2 0.9	59.15 .34	33.7 0.9	13.66 .74	5.3 1.4
15.7	44.25 .31	63.8 0.9	48.70 .35	63.3 0.9	59.49 .35	32.7 1.0	14.42 .77	4.1 1.0
25.7	44.56 +.31	62.8 −1.1	49.06 +.36	62.5 −0.9	59.84 +.35	31.8 −1.0	15.21 +.79	3.2 −0.6
Nov. 4.7	44.88 .31	61.6 1.3	49.42 .36	61.6 0.8	60.20 .35	30.8 0.9	16.00 .79	2.8 −0.2
14.7	45.19 .30	60.2 1.4	49.77 .35	60.8 0.7	60.55 .35	30.0 0.8	16.78 .77	2.8 +0.2
24.6	45.49 .29	58.7 1.5	50.12 .33	60.2 0.6	60.90 .34	29.2 0.7	17.54 .73	3.2 0.6
Dec. 4.6	45.77 .27	57.2 1.5	50.44 .31	59.7 0.4	61.23 .31	28.6 0.6	18.25 .68	4.1 1.1
14.6	46.02 +.24	55.7 −1.5	50.74 +.28	59.3 −0.3	61.53 +.28	28.1 −0.4	18.90 +.60	5.4 +1.5
24.6	46.24 .20	54.2 1.4	50.99 .24	59.1 −0.1	61.79 .24	27.8 −0.2	19.46 .51	7.1 1.9
34.5	46.42 +.15	52.8 −1.3	51.21 +.19	59.1 +0.1	62.01 +.20	27.7 0.0	19.93 +.41	9.2 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argûs (ρ)		η Cancri.		ε Hydræ.		Ursæ Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 8 2	° ′ −23 59	h m 8 26	° ′ +20 48	h m 8 41	° ′ + 6 48	h m 8 51	° ′ +48 27
	s	″	s	″	s	″	s	″
(Dec.30.6)	60.05 +.16	36.3 −2.9	32.09 +.24	18.6 −0.6	7.25 +.23	44.9 −1.5	54.17 +.35	39.2 +0.8
Jan. 9.5	60.20 .13	39.1 2.8	32.31 .19	18.1 0.4	7.46 .19	43.5 1.3	54.49 .28	40.1 1.1
19.5	60.30 .08	41.9 2.7	32.48 .14	17.7 −0.2	7.62 .14	42.2 1.1	54.74 .21	41.3 1.4
29.5	60.35 +.02	44.5 2.5	32.59 .08	17.7 0.0	7.74 .09	41.3 0.9	54.92 .14	42.8 1.6
Feb. 8.5	60.35 −.03	46.9 2.2	32.65 +.03	17.7 +0.2	7.81 +.04	40.5 0.7	55.02 +.07	44.5 1.7
18.4	60.30 −.07	48.9 −1.9	32.66 −.02	18.0 +0.3	7.82 −.01	39.9 −0.5	55.06 .00	46.3 +1.8
28.4	60.21 .11	50.7 1.6	32.62 .06	18.4 0.4	7.79 .05	39.5 0.3	55.02 −.07	48.1 1.8
Mar. 10.4	60.08 .14	52.1 1.3	32.53 .10	18.9 0.5	7.72 .08	39.3 −0.1	54.91 .13	49.8 1.7
20.4	59.92 .17	53.2 0.9	32.42 .13	19.4 0.5	7.62 .11	39.2 0.0	54.77 .17	51.4 1.5
30.3	59.74 .18	53.9 0.5	32.28 .15	19.9 0.5	7.49 .13	39.3 +0.2	54.58 .20	52.9 1.3
Apr. 9.3	59.56 −.18	54.3 −0.2	32.13 −.16	20.4 +0.5	7.36 −.14	39.6 +0.3	54.36 −.22	54.0 +1.0
19.3	59.37 .18	54.3 +0.2	31.97 .15	20.9 0.4	7.22 .14	39.9 0.3	54.13 .23	54.8 0.7
29.3	59.20 .17	53.9 0.6	31.83 .14	21.2 0.3	7.08 .13	40.3 0.4	53.91 .22	55.3 +0.3
May 9.2	59.04 .15	53.1 0.9	31.69 .12	21.6 0.3	6.95 .12	40.7 0.5	53.69 .20	55.5 0.0
19.2	58.91 .12	52.1 1.2	31.58 .10	21.8 0.2	6.84 .10	41.2 0.5	53.49 .18	55.3 −0.3
29.2	58.80 −.09	50.8 +1.5	31.49 −.07	21.9 +0.1	6.75 −.08	41.7 +0.5	53.33 −.15	54.8 −0.7
June 8.1	58.72 .06	49.2 1.7	31.44 .04	22.0 0.0	6.68 .05	42.3 0.6	53.20 .11	53.9 1.0
18.1	58.67 −.03	47.3 1.9	31.41 −.01	22.0 0.0	6.65 −.02	42.9 0.6	53.11 .06	52.8 1.2
28.1	58.66 .00	45.3 2.0	31.42 +.02	21.9 −0.1	6.64 +.01	43.5 0.6	53.07 −.02	51.4 1.4
July 8.1	58.69 +.04	43.2 2.1	31.46 .06	21.8 0.2	6.67 .04	44.1 0.6	53.07 +.02	49.8 1.7
18.0	58.75 +.06	41.0 +2.2	31.54 +.09	21.6 −0.2	6.72 +.07	44.6 +0.5	53.13 +.07	48.1 −1.9
28.0	58.84 .11	38.8 2.1	31.64 .12	21.3 0.3	6.80 .10	45.1 0.4	53.22 .12	46.2 2.0
Aug. 7.0	58.96 .14	36.7 2.0	31.78 .15	20.9 0.4	6.91 .12	45.5 0.3	53.36 .16	44.1 2.1
17.0	59.12 .17	34.8 1.8	31.95 .18	20.4 0.5	7.05 .15	45.7 +0.2	53.54 .20	42.0 2.1
26.9	59.31 .20	33.1 1.6	32.14 .21	19.8 0.6	7.22 .18	45.9 0.0	53.77 .24	39.9 2.1
Sept. 5.9	59.53 +.23	31.7 +1.2	32.36 +.23	19.1 −0.8	7.41 +.21	45.8 −0.2	54.03 +.28	37.7 −2.1
15.9	59.78 .26	30.7 0.8	32.61 .26	18.3 0.9	7.63 .23	45.5 0.4	54.34 .32	35.6 2.1
25.8	60.05 .28	30.1 +0.4	32.88 .28	17.3 1.0	7.87 .26	45.0 0.6	54.68 .36	33.5 2.0
Oct. 5.8	60.34 .30	30.0 −0.1	33.18 .30	16.2 1.1	8.14 .28	44.3 0.8	55.06 .39	31.6 1.9
15.8	60.65 .31	30.4 0.6	33.49 .32	15.1 1.2	8.43 .30	43.3 1.1	55.47 .42	29.8 1.7
25.8	60.97 +.32	31.3 −1.1	33.82 +.34	13.8 −1.2	8.74 +.31	42.1 −1.3	55.90 +.44	28.1 −1.5
Nov. 4.7	61.29 .32	32.6 1.6	34.16 .34	12.5 1.3	9.06 .32	40.7 1.5	56.35 .46	26.7 1.3
14.7	61.62 .32	34.4 2.0	34.51 .35	11.2 1.3	9.38 .32	39.2 1.6	56.82 .46	25.6 1.0
24.7	61.93 .31	36.6 2.3	34.86 .34	10.0 1.2	9.71 .32	37.5 1.7	57.28 .46	24.7 0.7
Dec. 4.7	62.23 .28	39.1 2.6	35.19 .32	8.9 1.1	10.03 .31	35.8 1.7	57.74 .44	24.3 −0.3
14.6	62.49 +.25	41.8 −2.8	35.51 +.30	7.9 −0.9	10.33 +.29	34.1 −1.7	58.17 +.42	24.2 +0.1
24.6	62.72 .21	44.7 2.9	35.79 .27	7.0 0.7	10.61 .25	32.5 1.6	58.57 .39	24.5 0.5
34.6	62.92 +.16	47.6 −2.9	36.04 +.23	6.4 −0.5	10.85 +.22	30.9 −1.5	58.92 +.33	25.1 +0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ² Ursæ Majoris. Right Ascension.	σ² Ursæ Majoris. Declination North.	κ Cancri. Right Ascension.	κ Cancri. Declination North.	ι Argûs. Right Ascension.	ι Argûs. Declination South.	1 Draconis (H.) Right Ascension.	1 Draconis (H.) Declination North.
	h m 9 0	+67° 33′	h m 9 1	+11° 5′	h m 9 14	−58° 49′	h m 9 21	+81° 47′
	s	″	s	″	s	″	s	″
(Dec.30.6)	61.29 +.55	62.8 +1.5	57.75 +.25	58.8 −1.3	14.54 +.31	15.9 −3.5	56.78+1.39	49.3 +1.8
Jan. 9.6	61.79 .45	64.6 1.9	57.99 .21	57.5 1.1	14.82 .24	19.5 3.7	58.04 1.14	51.4 2.2
19.6	62.19 .34	66.7 2.2	58.18 .16	56.5 0.9	15.01 .16	23.3 3.8	59.05 .87	53.8 2.6
29.5	62.47 .22	69.0 2.4	58.32 .11	55.7 0.7	15.13 +.07	27.1 3.8	59.78 .56	56.6 2.8
Feb. 8.5	62.63 +.10	71.6 2.6	58.41 .06	55.1 0.5	15.16 −.01	30.9 3.7	60.20 +.27	59.6 3.0
18.5	62.66 −.02	74.2 +2.6	58.45 +.01	54.7 −0.3	15.11 −.09	34.5 −3.5	60.31 −.04	62.6 +3.0
28.4	62.58 .13	76.8 2.5	58.44 −.03	54.6 −0.1	14.99 .16	37.9 3.2	60.11 .34	65.6 2.9
Mar. 10.4	62.39 .23	79.2 2.3	58.39 .07	54.6 +0.1	14.80 .22	41.0 2.9	59.62 .61	68.4 2.7
20.4	62.11 .31	81.4 2.0	58.30 .10	54.8 0.2	14.55 .27	43.8 2.5	58.88 .85	70.9 2.4
30.4	61.76 .38	83.2 1.6	58.19 .12	55.0 0.3	14.25 .31	46.1 2.1	57.92 1.04	73.1 2.0
Apr. 9.3	61.35 −.42	84.7 +1.2	58.06 −.13	55.4 +0.4	13.92 −.34	47.9 −1.6	56.79−1.18	74.8 +1.5
19.3	60.91 .44	85.6 0.7	57.92 .14	55.8 0.4	13.57 .36	49.3 1.1	55.55 1.27	76.0 0.9
29.3	60.47 .44	86.1 +0.2	57.79 .13	56.2 0.4	13.21 .36	50.2 0.6	54.24 1.31	76.6 +0.3
May 9.3	60.03 .42	86.1 −0.2	57.66 .12	56.7 0.5	12.84 .36	50.5 −0.1	52.93 1.29	76.7 −0.2
19.2	59.63 .38	85.6 0.7	57.54 .10	57.2 0.4	12.49 .34	50.4 +0.4	51.66 1.23	76.2 0.8
29.2	59.27 −.33	84.7 −1.2	57.45 −.08	57.6 +0.4	12.16 −.32	49.7 +0.9	50.47−1.12	75.1 −1.3
June 8.2	58.97 .27	83.3 1.6	57.38 .06	58.0 0.4	11.85 .29	48.5 1.4	49.41 .98	73.5 1.8
18.1	58.74 .20	81.5 1.9	57.33 .03	58.4 0.4	11.58 .25	46.9 1.8	48.51 .81	71.5 2.2
28.1	58.58 .12	79.4 2.2	57.31 −.01	58.8 0.3	11.35 .21	44.9 2.2	47.80 .61	69.1 2.6
July 8.1	58.50 −.04	77.0 2.5	57.32 +.02	59.1 0.3	11.16 .16	42.5 2.5	47.28 .40	66.3 2.9
18.1	58.50 +.04	74.4 −2.7	57.36 +.05	59.4 +0.2	11.03 −.10	39.9 +2.7	46.99 −.18	63.3 −3.1
28.0	58.59 .13	71.6 2.8	57.42 .08	59.6 +0.1	10.96 −.04	37.0 2.9	46.92 +.04	60.0 3.3
Aug. 7.0	58.76 .21	68.7 2.9	57.51 .11	59.7 0.0	10.96 +.02	34.1 3.0	47.07 .27	56.6 3.4
17.0	59.01 .29	65.8 2.9	57.63 .14	59.7 −0.1	11.01 .09	31.1 2.9	47.46 .50	53.2 3.4
27.0	59.33 .36	62.8 2.9	57.78 .16	59.5 0.3	11.14 .16	28.2 2.8	48.07 .72	49.7 3.4
Sept. 5.9	59.73 +.44	59.9 −2.8	57.96 +.19	59.1 −0.4	11.33 +.23	25.5 +2.6	48.89 +.93	46.4 −3.3
15.9	60.21 .51	57.2 2.7	58.17 .22	58.6 0.6	11.59 .29	23.1 2.2	49.92 1.12	43.2 3.1
25.9	60.75 .57	54.6 2.5	58.40 .25	57.8 0.6	11.91 .35	21.1 1.7	51.13 1.30	40.2 2.9
Oct. 5.8	61.35 .63	52.2 2.2	58.66 .27	56.9 1.0	12.29 .40	19.7 1.2	52.52 1.46	37.4 2.6
15.8	62.00 .68	50.1 1.9	58.94 .29	55.7 1.2	12.72 .45	18.7 +0.6	54.06 1.60	35.0 2.2
25.8	62.70 +.71	48.4 −1.6	59.25 +.31	54.4 −1.4	13.19 +.48	18.4 0.0	55.73+1.71	33.1 −1.8
Nov. 4.8	63.42 .74	47.0 1.2	59.57 .33	52.9 1.5	13.68 .50	18.8 −0.7	57.48 1.78	31.5 1.3
14.7	64.17 .75	46.0 0.7	59.90 .33	51.3 1.6	14.18 .50	19.6 1.3	59.30 1.82	30.5 0.8
24.7	64.92 .74	45.5 −0.2	60.24 .33	49.7 1.6	14.68 .49	21.4 1.9	61.12 1.81	30.0 −0.2
Dec. 4.7	65.65 .71	45.6 +0.3	60.57 .32	48.0 1.6	15.16 .46	23.6 2.5	62.92 1.76	30.1 +0.4
14.7	66.34 +.66	46.1 +0.8	60.89 +.30	46.3 −1.6	15.60 +.41	26.4 −2.9	64.64+1.65	30.8 +1.0
24.6	66.98 .60	47.1 1.2	61.19 .28	44.8 1.4	15.99 .36	29.5 3.3	66.22 1.49	32.0 1.5
34.6	67.53 +.52	48.5 + .7	61.45 +.24	43.4 −1.3	16.32 +.29	33.0 −3.6	67.61+1.31	33.8 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Hydræ.		δ Ursæ Majoris.		θ Ursæ Majoris.		ε Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 9 22	° ′ − 8 11	h m 9 25	° ′ +70 17	h m 9 25	° ′ +52 9	h m 9 39	° ′ +24 15
	s	″	s	″	s	″	s	″
(Dec.30.6)	20.22 +.26	34.4 −2.3	3.96 +.66	54.5 +1.4	43.28 +.40	48.2 +0.6	47.27 +.31	59.7 −0.8
Jan. 9.6	20.45 .21	36.7 2.1	4.56 .55	56.1 1.8	43.65 .34	49.0 1.0	47.56 .26	59.0 0.6
19.6	20.65 .17	38.8 2.0	5.05 .43	58.2 2.2	43.96 .27	50.2 1.3	47.80 .21	58.6 −0.3
29.5	20.80 .12	40.8 1.9	5.42 .30	60.5 2.5	44.20 .20	51.7 1.6	47.99 .16	58.4 0.0
Feb. 8.5	20.89 .07	42.6 1.7	5.66 .17	63.1 2.7	44.36 .12	53.5 1.8	48.13 .11	58.6 +0.3
18.5	20.94 +.02	44.2 −1.4	5.75 +.03	65.9 +2.7	44.44 +.04	55.4 +2.0	48.22 +.06	58.9 +0.5
28.4	20.94 −.02	45.5 1.2	5.72 −.10	68.6 2.7	44.44 −.03	57.4 2.1	48.25 +.01	59.5 0.7
Mar. 10.4	20.90 .06	46.6 0.9	5.55 .22	71.2 2.5	44.38 .10	59.5 2.0	48.23 −.04	60.3 0.8
20.4	20.82 .09	47.4 0.7	5.28 .32	73.6 2.2	44.25 .15	61.4 1.8	48.17 .08	61.1 0.9
30.4	20.72 .11	47.9 0.4	4.91 .40	75.7 1.9	44.07 .19	63.1 1.6	48.08 .11	62.0 0.9
Apr. 9.3	20.60 −.13	48.2 −0.2	4.48 −.46	77.4 +1.5	43.86 −.22	64.6 +1.3	47.96 −.13	62.8 +0.9
19.3	20.47 .13	48.3 0.0	4.00 .49	78.7 1.0	43.62 .24	65.8 1.0	47.83 .14	63.7 0.8
29.3	20.33 .13	48.2 +0.2	3.49 .51	79.4 +0.5	43.37 .24	66.6 0.6	47.69 .14	64.4 0.7
May 9.3	20.20 .13	47.8 0.4	2.99 .49	79.7 0.0	43.13 .24	67.0 +0.2	47.55 .13	65.0 0.6
19.2	20.08 .12	47.3 0.6	2.50 .46	79.4 −0.5	42.90 .22	67.1 −0.1	47.42 .12	65.5 0.4
29.2	19.97 −.10	46.6 +0.8	2.06 −.42	78.7 −1.0	42.69 −.19	66.8 −0.5	47.31 −.11	65.8 +0.2
June 8.2	19.88 .08	45.8 0.9	1.66 .36	77.5 1.4	42.52 .16	66.1 0.9	47.21 .09	65.9 +0.1
18.1	19.82 .06	44.8 1.0	1.34 .29	75.8 1.8	42.38 .12	65.0 1.2	47.14 .06	65.9 −0.1
28.1	19.77 .03	43.7 1.1	1.09 .21	73.8 2.2	42.29 .07	63.6 1.5	47.09 .03	65.8 0.2
July 8.1	19.76 −.01	42.6 1.2	0.92 .12	71.4 2.5	42.23 −.03	62.0 1.8	47.07 −.01	65.5 0.4
18.1	19.76 +.02	41.4 +1.2	0.85 −.03	68.8 −2.8	42.23 +.02	60.1 −2.0	47.07 +.02	65.1 −0.5
28.0	19.79 .05	40.2 1.2	0.86 +.06	65.9 3.0	42.27 .07	57.9 2.2	47.10 .05	64.4 0.7
Aug. 7.0	19.86 .08	39.1 1.1	0.97 .15	62.8 3.1	42.36 .11	55.7 2.3	47.17 .08	63.7 0.8
17.0	19.95 .10	38.1 1.0	1.16 .24	59.7 3.1	42.49 .16	53.3 2.4	47.26 .11	62.8 1.0
27.0	20.06 .13	37.2 0.8	1.45 .33	56.6 3.1	42.68 .21	50.8 2.5	47.38 .14	61.7 1.1
Sept. 5.9	20.21 +.16	36.5 +0.6	1.83 +.42	53.4 −3.1	42.91 +.25	48.3 −2.5	47.53 +.17	60.5 −1.3
15.9	20.39 .19	36.1 +0.3	2.29 .50	50.4 3.0	43.18 .30	45.7 2.5	47.72 .20	59.1 1.4
25.9	20.60 .22	36.0 0.0	2.83 .58	47.5 2.8	43.50 .34	43.2 2.4	47.94 .23	57.7 1.5
Oct. 5.8	20.84 .25	36.2 −0.4	3.45 .65	44.8 2.6	43.86 .38	40.8 2.3	48.18 .26	56.0 1.6
15.8	21.11 .28	36.8 0.8	4.13 .71	42.4 2.3	44.26 .42	38.6 2.2	48.46 .30	54.3 1.7
25.8	21.39 +.30	37.8 −1.1	4.87 +.77	40.3 −1.9	44.70 +.46	36.5 −2.0	48.77 +.32	52.5 −1.8
Nov. 4.8	21.71 .32	39.1 1.4	5.66 .80	38.6 1.5	45.16 .48	34.6 1.7	49.10 .34	50.7 1.8
14.7	22.03 .33	40.7 1.7	6.48 .82	37.3 1.0	45.65 .49	33.1 1.4	49.45 .35	48.9 1.8
24.7	22.36 .33	42.5 2.0	7.31 .83	36.6 −0.5	46.15 .50	31.9 1.0	49.81 .36	47.2 1.7
Dec. 4.7	22.68 .32	44.6 2.2	8.14 .81	36.3 0.0	46.64 .49	31.2 0.6	50.18 .36	45.6 1.5
14.7	23.00 +.30	46.9 −2.3	8.93 +.76	36.6 +0.5	47.12 +.46	30.8 −0.2	50.53 +.35	44.1 −1.3
24.6	23.29 .28	49.2 2.3	9.67 .70	37.4 1.1	47.57 .43	30.9 +0.3	50.87 .32	42.9 1.1
34.6	23.55 +.25	51.5 −2.3	10.33 +.62	38.7 +1.6	47.98 +.38	31.4 +0.7	51.18 +.29	42.0 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	μ Leonis.		α Leonis. (*Regulus.*)		32 Ursæ Majoris.		γ¹ Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 9 46	° ′ +26 30	h m 10 2	° ′ +12 29	h m 10 10	° ′ +65 38	h m 10 14	° ′ +20 22
(Dec. 30.6)	s 41.31 +.31	″ 37.4 −0.8	s 40.81 +.30	″ 25.7 −1.6	s 17.79 +.60	″ 21.2 +0.7	s 4.82 +.32	″ 56.8 −1.3
Jan. 9.6	41.60 .27	36.8 0.5	41.09 .26	24.2 1.3	18.37 .54	22.2 1.2	5.12 .28	55.6 1.0
19.6	41.85 .22	36.4 −0.2	41.33 .22	23.1 1.1	18.87 .46	23.6 1.6	5.39 .24	54.8 0.7
29.6	42.05 .17	36.4 +0.1	41.53 .18	22.1 0.8	19.27 .35	25.5 2.0	5.61 .19	54.3 0.4
Feb. 8.5	42.20 .12	36.7 0.4	41.69 .13	21.5 0.5	19.57 .26	27.7 2.2	5.78 .14	54.1 −0.1
18.5	42.29 +.06	37.2 +0.6	41.79 +.08	21.1 −0.3	19.77 +.14	30.1 +2.5	5.90 +.09	54.1 +0.2
28.5	42.34 +.01	37.9 0.8	41.84 +.03	20.9 0.0	19.85 +.03	32.8 2.7	5.96 +.04	54.5 0.4
Mar. 10.5	42.32 −.04	38.7 0.9	41.84 −.01	21.0 +0.2	19.83 −.07	35.4 2.6	5.98 .00	55.0 0.6
20.4	42.27 .07	39.7 1.0	41.81 .05	21.3 0.3	19.70 .17	38.0 2.5	5.96 −.04	55.7 0.7
30.4	42.18 .10	40.7 1.0	41.74 .08	21.7 0.4	19.49 .24	40.3 2.2	5.90 .07	56.5 0.8
Apr. 9.4	42.07 −.12	41.7 +0.9	41.65 −.10	22.1 +0.5	19.21 −.30	42.4 +1.9	5.81 −.10	57.3 +0.8
19.3	41.93 .14	42.6 0.8	41.54 .11	22.7 0.6	18.88 .35	44.1 1.5	5.71 .12	58.1 0.8
29.3	41.79 .14	43.4 0.7	41.42 .12	23.2 0.6	18.51 .38	45.5 1.1	5.59 .12	58.9 0.8
May 9.3	41.65 .13	44.0 0.6	41.30 .12	23.8 0.6	18.12 .39	46.3 0.6	5.46 .12	59.6 0.7
19.3	41.52 .12	44.5 0.4	41.18 .11	24.4 0.5	17.73 .39	46.7 +0.1	5.34 .12	60.3 0.6
29.2	41.40 −.11	44.8 +0.2	41.07 −.10	24.9 +0.5	17.35 −.36	46.5 −0.4	5.23 −.11	60.8 +0.4
June 8.2	41.29 .09	45.0 0.0	40.98 .08	25.4 0.4	17.01 .33	45.9 0.8	5.13 .10	61.1 0.3
18.2	41.21 .07	44.9 −0.2	40.91 .07	25.8 0.4	16.70 .28	44.8 1.3	5.04 .08	61.3 +0.2
28.2	41.16 .04	44.7 0.3	40.85 .05	26.1 0.3	16.44 .23	43.3 1.7	4.98 .06	61.4 0.0
July 8.1	41.13 −.01	44.3 0.5	40.81 −.03	26.3 0.2	16.23 .17	41.4 2.1	4.93 .04	61.3 −0.1
18.1	41.13 +.02	43.7 −0.6	40.80 .00	26.4 +0.1	16.09 −.11	39.1 −2.4	4.91 −.01	61.1 −0.3
28.1	41.15 .04	43.0 0.8	40.81 +.02	26.5 0.0	16.01 −.04	36.5 2.7	4.91 +.01	60.7 0.5
Aug. 7.0	41.21 .07	42.1 1.0	40.84 .05	26.4 −0.2	16.00 +.03	33.7 2.9	4.93 .04	60.1 0.6
17.0	41.29 .10	41.1 1.1	40.90 .08	26.1 0.3	16.06 .10	30.7 3.1	4.99 .07	59.4 0.8
27.0	41.41 .13	39.9 1.3	40.99 .10	25.7 0.5	16.19 .17	27.6 3.2	5.07 .10	58.5 1.0
Sept. 6.0	41.56 +.16	38.5 −1.4	41.11 +.13	25.1 −0.7	16.40 +.24	24.4 −3.2	5.19 +.13	57.4 −1.2
15.9	41.74 .19	37.0 1.6	41.26 .16	24.3 0.9	16.67 .31	21.1 3.2	5.33 .16	56.1 1.3
25.9	41.95 .23	35.4 1.7	41.44 .20	23.3 1.1	17.02 .38	17.9 3.1	5.51 .19	54.7 1.5
Oct. 5.9	42.20 .26	33.6 1.8	41.66 .23	22.1 1.3	17.44 .45	14.8 3.0	5.72 .22	53.1 1.7
15.9	42.47 .29	31.8 1.9	41.91 .26	20.7 1.5	17.93 .52	11.9 2.8	5.97 .26	51.3 1.8
25.8	42.78 +.32	29.9 −1.9	42.18 +.29	19.1 −1.7	18.48 +.58	9.2 −2.5	6.25 +.29	49.5 −1.9
Nov. 4.8	43.11 .34	28.0 1.9	42.48 .31	17.4 1.8	19.08 .62	6.9 2.1	6.56 .32	47.5 2.0
14.8	43.47 .36	26.1 1.8	42.81 .33	15.5 1.9	19.73 .66	4.9 1.7	6.89 .34	45.5 2.0
24.7	43.83 .37	24.4 1.7	43.15 .34	13.6 1.9	20.40 .68	3.4 1.3	7.24 .35	43.5 1.9
Dec. 4.7	44.20 .36	22.8 1.5	43.49 .34	11.7 1.9	21.09 .69	2.4 0.8	7.60 .36	41.6 1.8
14.7	44.57 +.35	21.4 −1.3	43.83 +.33	9.8 −1.8	21.78 +.67	1.9 −0.2	7.95 +.35	39.8 −1.6
24.7	44.91 .33	20.2 1.0	44.16 .32	8.0 1.7	22.44 .64	1.9 +0.3	8.30 .33	38.3 1.4
34.6	45.23 +.30	19.3 −0.7	44.47 +.29	6.5 −1.5	23.05 +.59	2.5 +0.8	8.62 +.31	36.9 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	9 Draconis (H.)		ρ Leonis.		η Argûs.		l Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 10 25	° ′ +76 15	h m 10 27	° ′ + 9 51	h m 10 40	° ′ −59 7	h m 10 43	° ′ +11 6
	s	″	s	″	s	″	s	″
(Dec. 30.6)	63.95 +1.01	39.1 +0.9	10.92 +.31	27.0 −1.7	54.66 +.45	+ 1.0 −2.9	38.20 +.32	41.3 −1.6
Jan. 9.6	64.91 .90	40.2 1.4	11.22 .28	25.3 1.5	55.09 .39	− 2.1 3.2	38.50 .29	39.7 1.5
19.6	65.74 .76	41.8 1.9	11.48 .24	23.9 1.3	55.45 .32	5.5 3.5	38.77 .25	38.3 1.3
29.6	66.43 .60	44.0 2.3	11.70 .19	22.8 1.0	55.74 .26	9.1 3.7	39.01 .21	37.1 1.0
Feb. 8.5	66.96 .43	46.4 2.6	11.87 .15	21.9 0.7	55.95 .17	12.9 3.8	39.20 .16	36.2 0.7
18.5	67.30 +.26	49.2 +2.8	11.99 +.10	21.3 −0.4	56.09 +.10	16.6 −3.7	39.34 +.11	35.7 −0.4
28.5	67.45 +.08	52.1 2.9	12.07 .05	20.9 −0.2	56.14 +.02	20.4 3.7	39.43 .07	35.4 −0.1
Mar. 10.5	67.42 −.11	55.1 2.9	12.10 +.01	20.8 0.0	56.13 −.06	23.9 3.5	39.48 +.03	35.4 +0.1
20.4	67.22 .28	57.9 2.7	12.09 −.03	20.9 +0.2	56.04 .11	27.3 3.2	39.49 −.01	35.5 0.3
30.4	66.86 .43	60.5 2.5	12.04 .06	21.2 0.3	55.90 .17	30.4 2.9	39.45 .04	35.9 0.4
Apr. 9.4	66.37 −.55	62.8 +2.1	11.97 −.08	21.6 +0.4	55.70 −.22	33.1 −2.5	39.39 −.07	36.3 +0.5
19.4	65.77 .64	64.8 1.7	11.88 .10	22.1 0.5	55.47 .26	35.4 2.1	39.31 .09	36.9 0.6
29.3	65.09 .70	66.2 1.2	11.77 .11	22.6 0.6	55.20 .28	37.3 1.7	39.22 .10	37.5 0.6
May 9.3	64.37 .73	67.2 0.7	11.66 .11	23.2 0.6	54.90 .30	38.8 1.2	39.11 .11	38.2 0.6
19.3	63.62 .74	67.6 +0.1	11.55 .11	23.8 0.6	54.59 .31	39.7 0.7	39.00 .10	38.8 0.6
29.3	62.89 −.72	67.4 −0.4	11.45 −.10	24.4 +0.6	54.27 −.32	40.2 −0.2	38.90 −.10	39.4 +0.6
June 8.2	62.18 .67	66.7 0.9	11.35 .09	24.9 0.5	53.96 .31	40.1 +0.3	38.80 .09	39.9 0.5
18.2	61.54 .60	65.5 1.4	11.26 .08	25.4 0.4	53.65 .30	39.6 0.8	38.71 .08	40.4 0.5
28.2	60.97 .52	63.8 1.9	11.20 .06	25.8 0.4	53.36 .28	38.6 1.2	38.64 .07	40.8 0.4
July 8.1	60.49 .43	61.7 2.3	11.14 .04	26.1 0.3	53.09 .25	37.1 1.7	38.58 .05	41.1 0.3
18.1	60.11 −.32	59.2 −2.7	11.11 −.02	26.4 +0.2	52.86 −.21	35.2 +2.1	38.53 −.03	41.3 +0.1
28.1	59.84 .20	56.3 3.0	11.10 .00	26.5 +0.1	52.67 .17	33.0 2.4	38.51 −.01	41.4 0.0
Aug. 7.1	59.70 −.06	53.2 3.2	11.12 +.02	26.5 0.0	52.53 .11	30.5 2.6	38.51 +.01	41.3 −0.1
17.0	59.68 +.04	49.8 3.4	11.15 .05	26.4 −0.2	52.44 −.05	27.9 2.7	38.53 .03	41.1 0.3
27.0	59.78 .17	46.3 3.5	11.22 .08	26.1 0.4	52.42 +.01	25.1 2.8	38.58 .06	40.7 0.5
Sept. 6.0	60.02 +.30	42.8 −3.5	11.31 +.11	25.6 −0.6	52.46 +.08	22.3 +2.7	38.65 +.09	40.1 −0.7
16.0	60.39 .43	39.2 3.5	11.43 .14	24.9 0.8	52.58 .15	19.6 2.5	38.76 .12	39.3 0.9
25.9	60.88 .56	35.7 3.4	11.59 .17	24.0 1.0	52.77 .23	17.2 2.3	38.90 .16	38.3 1.1
Oct. 5.9	61.50 .68	32.4 3.2	11.78 .21	22.9 1.2	53.03 .30	15.1 1.9	39.08 .19	37.1 1.3
15.9	62.24 .79	29.2 3.0	12.01 .24	21.5 1.4	53.37 .37	13.4 1.4	39.29 .23	35.6 1.5
25.8	63.09 +.89	26.3 −2.7	12.27 +.27	20.0 −1.6	53.77 +.43	12.2 +0.9	39.54 +.26	34.0 −1.7
Nov. 4.8	64.03 .98	23.8 2.3	12.56 .30	18.2 1.8	54.22 .47	11.5 +0.3	39.82 .29	32.2 1.9
14.8	65.05 1.06	21.8 1.8	12.87 .32	16.3 1.9	54.72 .51	11.5 −0.3	40.13 .32	30.2 2.0
24.7	66.13 1.09	20.2 1.3	13.20 .34	14.3 2.0	55.24 .53	12.2 0.9	40.46 .33	28.1 2.1
Dec. 4.7	67.24 1.11	19.2 0.7	13.54 .34	12.2 2.0	55.77 .53	13.4 1.5	40.80 .34	26.0 2.1
14.7	68.34 +1.09	18.7 −0.1	13.89 +.34	10.2 −2.0	56.29 +.51	15.3 −2.1	41.15 +.34	23.9 −2.0
24.7	69.42 1.04	18.9 +0.5	14.22 .32	8.3 1.9	56.79 .48	17.6 2.6	41.49 .33	22.0 1.9
34.6	70.43 + .98	19.6 +1.1	14.54 +.30	6.5 −1.7	57.25 +.44	−20.5 −3.1	41.81 +.31	20.2 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Majoris.		δ Leonis.		δ Crateris.		τ Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	10h 57m	+62° 19′	11h 8m	+21° 6′	11h 13m	−14° 11′	11h 22m	+ 3° 26′
	s	″	s	″	s	″	s	″
(Dec.30.7)	8.80 +.59	31.3 0.0	25.25 +.34	32.3 −1.5	59.32 +.33	50.8 −2.4	25.98 +.33	45.7 −2.1
Jan. 9.7	9.37 .54	31.5 +0.5	25.58 .32	30.9 1.2	59.64 .30	53.2 2.4	26.30 .30	43.6 1.9
19.6	9.88 .48	32.3 1.0	25.88 .28	29.8 0.9	59.92 .27	55.7 2.4	26.59 .27	41.8 1.7
29.6	10.32 .40	33.6 1.5	26.15 .24	29.1 0.5	60.17 .23	58.0 2.3	26.85 .23	40.1 1.5
Feb. 8.6	10.68 .31	35.4 1.9	26.37 .20	28.7 −0.2	60.38 .18	60.3 2.2	27.07 .19	38.8 1.2
18.5	10.95 +.22	37.5 +2.3	26.55 +.15	28.7 +0.1	60.54 +.14	62.3 −2.0	27.24 +.15	37.7 −0.9
28.5	11.13 .12	39.9 2.5	26.67 .10	28.9 0.4	60.66 .09	64.2 1.7	27.37 .11	36.8 0.7
Mar. 10.5	11.20 +.03	42.5 2.6	26.74 .05	29.4 0.6	60.73 .05	65.8 1.5	27.45 .06	36.3 0.4
20.5	11.18 −.06	45.1 2.6	26.78 +.01	30.2 0.8	60.76 +.01	67.2 1.3	27.50 +.02	36.0 −0.2
30.4	11.09 .14	47.7 2.5	26.77 −.03	31.1 0.9	60.75 −.02	68.3 1.0	27.50 −.01	35.9 0.0
Apr. 9.4	10.91 −.20	50.1 +2.3	26.72 −.06	32.1 +1.0	60.71 −.05	69.1 −0.7	27.48 −.04	36.0 +0.2
19.4	10.68 .25	52.2 2.0	26.65 .08	33.1 1.0	60.66 .07	69.7 0.5	27.43 .06	36.3 0.3
29.3	10.41 .29	54.0 1.6	26.56 .10	34.2 1.0	60.57 .09	70.1 −0.3	27.36 .08	36.7 0.4
May 9.3	10.10 .31	55.4 1.2	26.46 .11	35.1 0.9	60.48 .10	70.2 0.0	27.28 .09	37.1 0.5
19.3	9.77 .33	56.3 0.7	26.35 .11	36.0 0.8	60.38 .10	70.2 +0.2	27.19 .09	37.7 0.5
29.3	9.44 −.32	56.8 +0.2	26.24 −.11	36.7 +0.7	60.28 −.10	69.9 +0.3	27.10 −.09	38.2 +0.6
June 8.2	9.12 .31	56.7 −0.3	26.13 .10	37.3 0.5	60.18 .10	69.5 0.5	27.00 .09	38.8 0.6
18.2	8.82 .29	56.2 0.7	26.03 .10	37.7 0.3	60.08 .10	68.9 0.7	26.91 .09	39.4 0.6
28.2	8.54 .26	55.3 1.2	25.94 .09	37.9 +0.1	59.98 .09	68.1 0.8	26.82 .08	40.0 0.5
July 8.2	8.30 .22	53.9 1.6	25.86 .07	38.0 −0.1	59.90 .08	67.2 0.9	26.75 .07	40.5 0.5
18.1	8.11 −.17	52.0 −2.0	25.80 −.05	37.8 −0.3	59.82 −.07	66.2 +1.0	26.68 −.06	41.0 +0.4
28.1	7.95 .12	49.8 2.3	25.75 .03	37.4 0.5	59.77 .05	65.2 1.1	26.63 .04	41.4 0.3
Aug. 7.1	7.85 .07	47.3 2.6	25.73 −.01	36.9 0.7	59.72 .03	64.1 1.1	26.59 −.02	41.6 0.2
17.0	7.81 −.01	44.5 2.9	25.73 +.01	36.1 0.9	59.71 −.01	63.0 1.0	26.58 .00	41.8 +0.1
27.0	7.83 +.05	41.5 3.1	25.75 .04	35.1 1.1	59.72 +.02	62.0 0.9	26.59 +.02	41.8 −0.1
Sept. 6.0	7.91 +.11	38.3 −3.2	25.80 +.07	33.9 −1.3	59.75 +.05	61.2 +0.8	26.62 +.05	41.7 −0.3
16.0	8.05 .18	34.9 3.3	25.89 .10	32.4 1.5	59.82 .09	60.5 0.6	26.69 .08	41.3 0.5
25.9	8.26 .25	31.6 3.4	26.01 .14	30.8 1.7	59.93 .13	60.0 +0.3	26.79 .12	40.7 0.7
Oct. 5.9	8.54 .32	28.2 3.3	26.17 .18	29.0 1.9	60.08 .17	59.9 0.0	26.93 .16	39.8 1.0
15.9	8.89 .38	24.9 3.2	26.37 .22	27.0 2.1	60.26 .21	60.0 −0.3	27.10 .19	38.7 1.2
25.9	9.31 +.44	21.8 −3.0	26.60 +.25	24.9 −2.2	60.49 +.25	60.5 −0.7	27.32 +.23	37.4 −1.5
Nov. 4.8	9.78 .50	18.9 2.7	26.88 .29	22.7 2.2	60.75 .28	61.4 1.1	27.57 .27	35.7 1.7
14.8	10.31 .55	16.3 2.4	27.18 .32	20.4 2.3	61.05 .31	62.6 1.4	27.85 .30	33.9 1.9
24.8	10.88 .59	14.1 2.0	27.51 .34	18.1 2.2	61.37 .33	64.2 1.7	28.16 .32	31.9 2.1
Dec. 4.7	11.49 .61	12.3 1.5	27.86 .36	15.9 2.1	61.71 .34	66.1 2.0	28.49 .34	29.8 2.2
14.7	12.10 +.61	11.1 −1.0	28.22 +.36	13.8 −2.0	62.06 +.34	68.2 −2.2	28.84 +.34	27.6 −2.2
24.7	12.71 .60	10.4 −0.4	28.58 .35	11.9 1.8	62.40 .33	70.5 2.4	29.18 .34	25.4 2.1
34.7	13.30 +.57	10.3 +0.1	28.93 +.34	10.3 −1.5	62.73 +.32	72.9 −2.4	29.51 +.33	23.3 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Draconis.		ν Leonis.		β Leonis.		γ Ursæ Majoris.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 11 25	° ′ +69 54	h m 11 31	° ′ − 0 13	h m 11 43	° ′ +15 9	h m 11 48	° ′ +54 16
	s	″	s	″	s	″	s	″
(Dec.30.7)	4.70 +.77	63.6 −0.2	28.04 +.33	56.1 −2.2	36.02 +.34	70.0 −1.9	12.78 +.50	69.3 −0.9
Jan. 9.7	5.45 .72	63.7 +0.4	28.37 .31	58.2 2.1	36.35 .32	68.2 1.6	13.28 .48	68.7 −0.4
19.6	6.15 .66	64.4 1.0	28.66 .28	60.2 1.9	36.67 .30	66.7 1.3	13.74 .44	68.6 +0.2
29.6	6.76 .57	65.8 1.6	28.92 .24	62.0 1.7	36.95 .26	65.5 1.0	14.16 .39	69.1 0.7
Feb. 8.6	7.28 .46	67.6 2.0	29.15 .20	63.6 1.5	37.19 .22	64.7 0.7	14.53 .33	70.1 1.2
18.5	7.69 +.34	69.8 +2.4	29.33 +.16	64.9 −1.2	37.39 +.18	64.2 −0.3	14.83 +.26	71.6 +1.6
28.5	7.97 .22	72.4 2.7	29.46 .12	66.0 0.9	37.54 .13	64.1 0.0	15.06 .19	73.5 2.0
Mar. 10.5	8.13 +.08	75.2 2.8	29.56 .07	66.8 0.6	37.65 .09	64.2 +0.3	15.21 .12	75.7 2.3
20.5	8.16 −.03	78.0 2.9	29.61 +.03	67.3 0.4	37.72 .05	64.6 0.5	15.29 +.05	78.0 2.4
30.4	8.07 .14	80.8 2.8	29.63 .00	67.6 −0.2	37.74 +.01	65.2 0.7	15.31 −.02	80.5 2.5
Apr. 9.4	7.88 −.24	83.5 +2.6	29.61 −.03	67.7 0.0	37.74 −.02	66.0 +0.8	15.25 −.08	83.0 +2.4
19.4	7.60 .32	85.9 2.3	29.57 .05	67.6 +0.2	37.70 .05	66.8 0.9	15.15 .13	85.3 2.2
29.4	7.24 .39	88.0 1.9	29.51 .07	67.4 0.3	37.64 .07	67.8 0.9	15.00 .17	87.5 2.0
May 9.3	6.82 .44	89.7 1.4	29.43 .08	67.1 0.4	37.56 .08	68.7 0.9	14.81 .20	89.3 1.7
19.3	6.36 .46	90.9 1.0	29.35 .09	66.6 0.5	37.47 .09	69.6 0.8	14.60 .22	90.6 1.3
29.3	5.88 −.46	91.6 +0.5	29.26 −.09	66.1 +0.5	37.38 −.10	70.4 +0.7	14.37 −.23	91.9 +0.9
June 8.3	5.40 .47	91.8 −0.1	29.16 .09	65.6 0.6	37.28 .10	71.1 0.6	14.13 .24	92.6 +0.5
18.2	4.93 .46	91.4 0.6	29.07 .09	65.0 0.6	37.18 .10	71.7 0.5	13.90 .23	92.8 0.0
28.2	4.49 .43	90.6 1.1	28.98 .08	64.4 0.6	37.08 .09	72.1 0.4	13.67 .22	92.6 −0.4
July 8.2	4.08 .39	89.2 1.6	28.90 .08	63.8 0.6	36.99 .08	72.4 +0.2	13.45 .20	91.9 0.9
18.1	3.72 −.33	87.4 −2.0	28.83 −.07	63.2 +0.6	36.91 −.07	72.5 0.0	13.26 −.18	90.8 −1.3
28.1	3.41 .27	85.1 2.4	28.77 .05	62.7 0.6	36.85 .06	72.5 −0.1	13.09 .15	89.3 1.7
Aug. 7.1	3.17 .20	82.5 2.8	28.73 .03	62.3 0.5	36.79 .04	72.2 0.3	12.95 .12	87.4 2.1
17.1	3.01 .13	79.6 3.1	28.70 −.01	61.9 0.4	36.76 −.02	71.8 0.5	12.85 .08	85.1 2.4
27.0	2.92 −.05	76.3 3.3	28.70 +.01	61.7 0.3	36.74 .00	71.2 0.7	12.78 −.04	82.5 2.7
Sept. 6.0	2.91 +.04	72.9 −3.5	28.73 +.04	61.7 +0.1	36.76 +.03	70.3 −1.0	12.76 +.01	79.7 −2.9
16.0	3.00 .13	69.3 3.6	28.79 .07	61.8 −0.1	36.81 .06	69.2 1.2	12.80 .06	76.6 3.1
26.0	3.17 .22	65.7 3.6	28.88 .11	62.2 0.3	36.89 .10	67.9 1.4	12.88 .11	73.4 3.3
Oct. 5.9	3.44 .31	62.0 3.6	29.00 .15	62.8 0.5	37.00 .14	66.3 1.6	13.02 .17	70.0 3.3
15.9	3.81 .41	58.4 3.5	29.17 .19	63.8 0.8	37.16 .18	64.6 1.8	13.23 .23	66.6 3.4
25.9	4.26 +.50	55.0 −3.3	29.38 +.23	64.9 −1.0	37.36 +.22	62.6 −2.0	13.49 +.29	63.3 −3.3
Nov. 4.8	4.81 .56	51.8 3.0	29.62 .26	66.4 1.3	37.60 .26	60.5 2.2	13.82 .35	60.0 3.2
14.8	5.43 .66	49.0 2.6	29.90 .29	68.1 1.6	37.87 .29	58.2 2.3	14.19 .40	56.9 3.0
24.8	6.13 .72	46.5 2.2	30.21 .32	70.0 1.8	38.18 .32	55.9 2.3	14.62 .45	54.1 2.7
Dec. 4.8	6.87 .76	44.5 1.8	30.54 .33	72.1 2.0	38.51 .34	53.6 2.3	15.09 .46	51.6 2.3
14.7	7.65 +.78	43.0 −1.2	30.88 +.34	74.3 −2.1	38.85 +.35	51.3 −2.2	15.58 +.50	49.6 −1.8
24.7	8.43 .78	42.1 −0.6	31.22 .34	76.5 2.2	39.20 .35	49.2 2.0	16.09 .51	48.0 1.3
34.7	9.20 +.76	41.9 +0.1	31.55 +.33	78.7 −2.2	39.55 +.34	47.2 −1.8	16.59 +.50	47.0 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*o* Virginis.		4 Draconis (H.)		γ Corvi.		β Chamæleontis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 11 59	° ′ + 9 19	h m 12 7	° ′ +78 12	h m 12 10	° ′ −16 56	h m 12 11	° ′ −78 42
	s	″	s	″	s	″	s	″
(Dec.30.7)	45.26 +.34	37.0 −2.0	14.06+1.24	22.2 −0.5	17.67 +.35	44.4 −2.3	62.30+1.21	41.5 −1.5
Jan. 9.6	45.59 .32	35.0 1.8	15.27 1.19	22.0 +0.1	18.01 .33	46.8 2.4	63.49 1.14	43.3 2.1
19.6	45.91 .30	33.3 1.5	16.43 1.11	22.5 0.7	18.33 .30	49.1 2.4	64.59 1.05	45.7 2.6
29.5	46.20 .27	31.8 1.2	17.49 1.00	23.5 1.3	18.63 .27	51.5 2.3	65.58 .92	48.5 3.0
Feb. 8.5	46.44 .23	30.6 0.9	18.43 .86	25.2 1.9	18.88 .23	53.8 2.2	66.43 .77	51.7 3.4
18.5	46.65 +.19	29.8 −0.6	19.22 +.69	27.3 +2.4	19.10 +.19	56.0 −2.1	67.13 +.61	55.2 −3.6
28.4	46.82 .14	29.2 −0.3	19.82 .50	29.9 2.7	19.27 .15	57.9 1.9	67.66 .45	59.0 3.8
Mar. 10.4	46.94 .10	29.0 0 0	20.22 .30	32.7 2.9	19.41 .11	59.7 1.7	68.03 .28	62.8 3.9
20.4	47.03 .06	29.1 +0.3	20.41 +.10	35.7 3.0	19.50 .07	61.3 1.4	68.22 +.11	66.7 3.9
30.4	47.07 +.02	29.4 0.5	20.41 −.10	38.7 3.0	19.55 .04	62.6 1.1	68.24 −.06	70.6 3.8
Apr. 9.3	47.08 −.01	29.8 +0.6	20.21 −.28	41.7 +2.9	19.57 +.01	63.7 −0.9	68.11 −.21	74.3 −3.6
19.3	47.06 .03	30.4 0.7	19.83 .45	44.4 2.6	19.57 −.02	64.5 0.7	67.82 .36	77.8 3.4
29.3	47.02 .05	31.1 0.8	19.30 .59	46.8 2.2	19.53 .04	65.2 0.5	67.38 .50	81.0 3.1
May 9.3	46.96 .07	31.9 0.9	18.64 .71	48.9 1.8	19.48 .06	65.6 0.3	66.82 .62	84.0 2.7
19.2	46.88 .08	32.7 0.9	17.88 .80	50.5 1.4	19.41 .08	65.8 −0.1	66.14 .73	86.5 2.3
29.2	46.80 −.09	33.5 +0.8	17.04 −.86	51.6 +0.8	19.33 −.09	65.8 +0.1	65.36 −.82	88.5 −1.8
June 8.2	46.71 .09	34.1 0.8	16.16 .89	52.2 +0.3	19.24 .10	65.6 0.3	64.51 .89	90.1 1.3
18.1	46.62 .09	34.7 0.7	15.26 .89	52.2 −0.2	19.14 .10	65.2 0.5	63.60 .93	91.1 0.8
28.1	46.52 .09	35.3 0.6	14.37 .87	51.7 0.8	19.04 .10	64.7 0.6	62.65 .95	91.6 −0.2
July 8.1	46.43 .09	35.7 0.5	13.52 .83	50.6 1.3	18.94 .10	64.0 0.7	61.69 .95	91.6 +0.3
18.1	46.35 −.08	36.0 +0.4	12.72 −.77	49.0 −1.8	18.84 −.09	63.2 +0.8	60.75 −.91	91.0 +0.8
28.0	46.27 .07	36.2 0.2	11.99 .68	46.9 2.3	18.75 .08	62.3 0.9	59.87 .85	89.9 1.3
Aug. 7.0	46.21 .05	36.3 +0.1	11.35 .58	44.4 2.7	18.67 .07	61.3 1.0	59.05 .76	88.3 1.8
17.0	46.16 .03	36.2 −0.1	10.82 .47	41.5 3.1	18.60 .05	60.3 1.0	58.35 .64	86.2 2.2
27.0	46.14 −.01	35.8 0.3	10.41 .34	38.2 3.4	18.56 −.03	59.4 0.9	57.78 .49	83.8 2.6
Sept. 5.9	46.14 +.01	35.3 −0.5	10.13 −.21	34.7 −3.6	18.54 .00	58.5 +0.8	57.37 −.32	81.0 +2.8
15.9	46.17 .04	34.5 0.7	9.99 −.06	31.0 3.8	18.56 +.03	57.7 0.7	57.15 −.12	78.1 2.9
25.9	46.23 .08	33.6 0.9	10.01 +.10	27.2 3.9	18.61 .07	57.1 0.5	57.13 +.08	75.2 2.9
Oct. 5.8	46.33 .12	32.3 1.2	10.19 .26	23.3 3.9	18.70 .11	56.7 +0.2	57.32 .29	72.3 2.8
15.8	46.47 .16	30.9 1.4	10.53 .42	19.5 3.8	18.83 .15	56.6 −0.1	57.72 .50	69.5 2.6
25.8	46.65 +.20	29.2 −1.7	11.03 +.58	15.7 −3.6	19.01 +.20	56.8 −0.4	58.33 +.69	67.0 +2.3
Nov. 4.8	46.87 .24	27.3 1.9	11.70 .74	12.2 3.4	19.24 .24	57.4 0.7	59.12 .87	64.9 1.9
14.7	47.13 .28	25.3 2.0	12.51 .88	9.0 3.1	19.50 .28	58.3 1.1	60.08 1.02	63.3 1.4
24.7	47.43 .31	23.0 2.1	13.46 1.01	6.1 2.6	19.80 .31	59.6 1.4	61.17 1.14	62.2 0.8
Dec. 4.7	47.75 .33	20.7 2.2	14.53 1.10	3.7 2.1	20.13 .33	61.2 1.7	62.35 1.21	61.7 +0.1
14.7	48.09 +.34	18.5 −2.1	15.67+1.17	1.8 −1.5	20.47 +.35	63.1 −2.0	63.60+1.25	61.9 −0.5
24.6	48.43 .34	16.2 2.0	16.88 1.21	0.6 0.9	20.83 .35	65.2 2.2	64.86 1.24	62.8 1.1
34.6	48.77 +.34	14.0 −1.9	18.09+1.22	0.0 −0.3	21.18 +.35	67.5 −2.3	66.09+1.20	64.2 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Virginis.		α¹ Crucis.		β Corvi.		κ Draconis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 12 14	° ′ − 0 4	h m 12 20	° ′ −62 30	h m 12 28	° ′ −22 48	h m 12 28	° ′ +70 22
	s	″	s	″	s	″	s	″
(Dec. 30.7)	25.49 +.34	18.3 −2.2	37.64 +.60	1.4 −1.7	45.27 +.36	8.9 −2.2	55.99 +.79	23.8 −1.0
Jan. 9.7	25.82 .32	20.5 2.1	38.22 .56	3.4 2.2	45.62 .34	11.2 2.3	56.77 .77	23.1 −0.4
19.7	26.14 .30	22.5 2.0	38.76 .52	5.9 2.6	45.96 .32	13.5 2.4	57.53 .74	23.0 +0.3
29.7	26.43 .27	24.3 1.7	39.25 .46	8.7 3.0	46.27 .29	16.0 2.4	58.24 .68	23.6 0.9
Feb. 8.6	26.68 .24	26.0 1.5	39.69 .40	11.9 3.3	46.54 .26	18.4 2.4	58.88 .60	24.8 1.4
18.6	26.90 +.20	27.3 −1.2	40.05 +.33	15.3 −3.5	46.78 +.22	20.8 −2.3	59.43 +.50	26.5 +1.9
28.6	27.08 .16	28.4 0.9	40.34 .25	18.9 3.6	46.98 .17	23.0 2.2	59.87 .38	28.7 2.3
Mar. 10.5	27.22 .12	29.2 0.6	40.56 .18	22.5 3.6	47.13 .13	25.1 2.0	60.20 .26	31.2 2.7
20.5	27.31 .08	29.7 0.4	40.70 .10	26.1 3.5	47.25 .09	27.0 1.8	60.40 .14	34.0 2.9
30.5	27.37 .04	30.0 −0.2	40.77 +.03	29.5 3.4	47.32 .06	28.6 1.5	60.48 +.02	36.9 2.9
Apr. 9.5	27.40 +.01	30.1 0.0	40.77 −.03	32.9 −3.2	47.37 +.03	30.1 −1.3	60.44 −.09	39.9 +2.9
19.4	27.39 −.02	30.0 +0.2	40.70 .09	36.0 2.9	47.38 .00	31.3 1.1	60.30 .19	42.7 2.7
29.4	27.37 .04	29.8 0.3	40.59 .15	38.8 2.6	47.36 −.03	32.2 0.8	60.05 .28	45.3 2.4
May 9.4	27.32 .05	29.4 0.4	40.41 .20	41.2 2.3	47.32 .05	33.0 0.6	59.72 .36	47.6 2.1
19.4	27.26 .07	28.9 0.5	40.20 .24	43.3 1.9	47.26 .07	33.5 0.4	59.33 .42	49.5 1.7
29.3	27.19 −.08	28.4 +0.5	39.94 −.27	45.0 −1.4	47.18 −.08	33.7 −0.1	58.88 −.46	51.0 +1.2
June 8.3	27.11 .08	27.8 0.6	39.65 .30	46.2 1.0	47.09 .09	33.8 +0.1	58.40 .49	51.9 0.7
18.3	27.02 .09	27.2 0.6	39.33 .32	46.9 −0.5	46.99 .10	33.6 0.3	57.90 .50	52.4 +0.2
28.2	26.92 .09	26.7 0.6	39.00 .33	47.2 0.0	46.89 .11	33.2 0.5	57.39 .51	52.3 −0.3
July 8.2	26.83 .09	26.1 0.6	38.67 .34	46.9 +0.5	46.78 .11	32.6 0.7	56.89 .49	51.7 0.9
18.2	26.74 −.09	25.6 +0.5	38.33 −.33	46.2 +0.9	46.67 −.11	31.9 +0.9	56.41 −.46	50.5 −1.4
28.2	26.66 .08	25.1 0.4	38.01 .31	45.0 1.4	46.56 .10	30.9 1.0	55.97 .42	48.9 1.9
Aug. 7.1	26.59 .07	24.7 0.3	37.72 .26	43.4 1.9	46.46 .09	29.9 1.1	55.57 .37	46.8 2.3
17.1	26.53 .05	24.4 0.2	37.46 .23	41.4 2.2	46.38 .07	28.8 1.1	55.22 .31	44.3 2.7
27.1	26.50 −.03	24.2 +0.1	37.25 .17	39.2 2.4	46.31 .05	27.6 1.1	54.94 .24	41.4 3.0
Sept. 6.1	26.48 .00	24.2 −0.1	37.11 −.11	36.7 +2.6	46.27 −.02	26.5 +1.1	54.73 −.16	38.2 −3.3
16.0	26.49 +.03	24.4 0.3	37.04 −.03	34.0 2.6	46.27 +.01	25.4 1.0	54.60 −.06	34.8 3.5
26.0	26.54 .06	24.8 0.5	37.05 +.06	31.4 2.6	46.30 .05	24.5 0.8	54.56 +.01	31.1 3.7
Oct. 6.0	26.63 .09	25.5 0.7	37.16 .15	28.8 2.5	46.37 .09	23.8 0.6	54.62 .11	27.3 3.8
16.0	26.76 .15	26.4 1.0	37.35 .24	26.5 2.2	46.49 .14	23.3 +0.3	54.79 .22	23.4 3.8
25.9	26.92 +.19	27.6 −1.3	37.63 +.32	24.4 +1.8	46.66 +.19	23.1 0.0	55.06 +.32	19.6 −3.7
Nov. 4.9	27.13 .24	29.0 1.6	38.00 .40	22.8 1.4	46.87 .24	23.3 −0.4	55.43 .42	15.9 3.5
14.9	27.38 .27	30.7 1.8	38.45 .48	21.6 0.9	47.13 .26	23.9 0.8	55.90 .52	12.5 3.3
24.8	27.67 .30	32.6 2.0	38.96 .54	21.0 +0.4	47.43 .31	24.8 1.1	56.47 .61	9.3 3.0
Dec. 4.8	27.98 .32	34.7 2.1	39.52 .58	20.9 −0.2	47.76 .34	26.1 1.5	57.12 .68	6.5 2.5
14.8	28.32 +.34	36.9 −2.2	40.12 +.60	21.4 −0.8	48.11 +.36	27.8 −1.8	57.84 +.73	4.2 −2.0
24.8	28.66 .34	39.1 2.2	40.72 .61	22.6 1.4	48.47 .36	29.7 2.0	58.59 .77	2.5 1.4
34.7	29.00 +.34	41.3 −2.2	41.32 +.58	24.3 −1.9	48.83 +.36	31.9 −2.2	59.37 +.79	1.4 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	32² Camelop. (H.)		α Can. Venaticorum.		θ Virginis.		α Virginis. (*Spica.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 12 48	° ′ +83 59	h m 12 51	° ′ +38 53	h m 13 4	° ′ − 4 58	h m 13 19	° ′ −10 36
	s	″	s	″	s	″	s	″
(Dec.30.7)	24.35+2.22	+21.6 −0.9	1.16 +.40	34.4 −1.9	23.79 +.35	2.0 −2.2	32.42 +.35	6.8 −2.1
Jan. 9.7	26.58 2.24	21 0 −0.3	1.56 .39	32.7 1.4	24.14 .33	4.2 2.1	32.77 .34	8.9 2.1
19.7	28.79 2.17	21.0 +0.4	1.95 .38	31.5 0.9	24.47 .32	6.3 2.0	33.11 .33	11.0 2.1
29.7	30.90 2.03	21.7 1.0	2.32 .35	30.8 −0.4	24.78 .30	8.3 1.9	33.43 .31	13.1 2.0
Feb. 8.6	32.84 1.82	23.0 1.6	2.66 .32	30.7 +0.1	25.07 .27	10.1 1.7	33.73 .28	15.0 1.9
18.6	34.54+1.54	24.9 +2.1	2.96 +.28	31.1 +0.6	25.33 +.24	11.6 −1.5	34.00 +.26	16.7 −1.7
28.6	35.93 1.22	27.3 2.5	3.21 .23	31.9 1.0	25.55 .20	13.0 1.2	34.23 .22	18.3 1.5
Mar.10.6	36.97 .86	30.0 2.8	3.41 .18	33.2 1.4	25.73 .16	14.1 0.9	34.43 .18	19.7 1.2
20.5	37.64 .47	32.9 3.0	3.56 .13	34.8 1.7	25.88 .13	14.9 0.7	34.59 .15	20.8 1.0
30.5	37.91+ .08	36.0 3.0	3.66 .08	36.6 1.9	25.99 .09	15.5 0.5	34.72 .11	21.7 0.8
Apr. 9.5	37.80− .30	39.0 +3.0	3.72 +.03	38.7 +2.1	26.07 +.06	15.8 −0.3	34.82 +.08	22.4 −0.6
19.4	37.31 .66	42.0 2.8	3.72 −.01	40.8 2.1	26.11 +.03	16.0 −0.1	34.88 .05	22.9 0.4
29.4	36.48 .98	44.7 2.5	3.69 .05	42.9 2.0	26.13 .00	15.9 +0.1	34.91 +.02	23.1 −0.2
May 9.4	35.34 1.27	47.0 2.1	3.63 .08	44.9 1.9	26.13 −.02	15 7 0.2	34.93 .00	23.3 0.0
19.4	33.94 1.50	49.0 1.7	3.54 .10	46.8 1.7	26.10 .04	15.5 0.3	34.91 −.02	23.2 +0.1
29.3	32.33−1.68	50.5 +1.2	3.42 −.12	48.4 +1.5	26.06 −.06	15.1 +0.4	34.88 −.04	23.1 +0.2
June 8.3	30.57 1.81	51.4 0.7	3.29 .14	49.7 1.2	26.00 .07	14.6 0.5	34.83 .06	22.8 0.3
18.3	28.71 1.88	51.8 +0.1	3.15 .15	50.7 0.8	25.92 .08	14.1 0.5	34.76 .08	22.5 0.4
28.3	26.80 1.90	51.7 −0.4	3.00 .15	51.3 0.4	25.84 .09	13.6 0.5	34.67 .09	22.1 0.5
July 8.2	24.90 1.88	51.0 1.0	2.84 .16	51.5 +0.1	25.74 .10	13.0 0.5	34.58 .10	21.6 0.5
18.2	23.04−1.80	49.7 −1.5	2.68 −.15	51.4 −0.3	25.64 −.10	12.5 +0.5	34.48 −.10	21.1 +0.6
28.2	21.29 1.69	47.9 2.0	2.53 .15	50.9 0.7	25.54 .10	12.0 0.5	34.37 .11	20.5 0.6
Aug. 7.1	19.66 1.54	45.7 2.5	2.39 .14	50.0 1.1	25.44 .09	11.5 0.5	34.26 .10	19.9 0.6
17.1	18.20 1.35	43.0 2.9	2.26 .12	48.8 1.4	25.35 .08	11.0 0.4	34.16 .09	19.3 0.6
27.1	16.95 1.13	40.0 3.2	2.16 .09	47.2 1.8	25.27 .07	10.7 0.3	34.07 .08	18.8 0.5
Sept. 6.1	15.94− .88	36.6 −3.5	2.08 −.06	45.2 −2.1	25.21 −.05	10.6 +0.2	34.00 −.06	18.3 +0.4
16.0	15.19 .61	33.0 3.7	2.03 −.03	43.0 2.4	25.18 −.02	10.4 0.0	33.95 −.03	17.9 0.3
26.0	14.71− .32	29.2 3.9	2.02 +.01	40.5 2.6	25.18 +.02	10.5 −0.2	33.94 .00	17.7 +0.1
Oct. 6.0	14.55 .00	25.3 3 9	2.06 .06	37.7 2.9	25.22 .06	10.9 0.4	33.96 +.04	17.7 −0.1
16.0	14.70+ .32	21.3 3.9	2.15 .11	34.7 3.0	25.29 .10	11.4 0.7	34.02 .09	18.0 0.3
25.9	15.18+ .64	17.4 −3.8	2.28 +.16	31.6 −3.1	25.42 +.15	12.3 −1.0	34.13 +.13	18.4 −0.6
Nov. 4.9	15.98 .96	13.7 3.6	2.47 .21	28.4 3.2	25.59 .19	13.4 1.2	34.29 .18	19.2 0.9
14.9	17.10 1.27	10.2 3.3	2.71 .26	25.2 3.2	25.80 .23	14.7 1.5	34.49 .22	20.2 1.2
24.8	18.53 1.55	7.1 2.9	3.00 .31	22.1 3.1	26.05 .27	16.3 1.7	34.74 .26	21.5 1.4
Dec. 4.8	20.22 1.80	4.3 2.5	3.33 .35	19.1 2.8	26.34 .30	18.2 1.9	35.02 .30	23.1 1.7
14.8	22.13+2.00	2.1 −1.9	3.69 +.38	16.3 −2.5	26.66 +.32	20.2 −2.0	35.34 +.32	24.8 −1.9
24.8	24.21 2.14	+ 0.4 1.3	4.08 .40	13.9 2.2	26.99 .34	22.3 2.1	35 67 .34	26.8 2.0
34.7	26.40+2.24	− 0.6 −0.7	4.48 +.40	11.9 −1.8	27.34 +.35	24.5 −2.2	36.02 +.35	28.8 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Virginis.		η Ursæ Majoris.		η Bootis.		β Centauri.	
	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.
	h m 13 29	° ′ − 0 2	h m 13 43	° ′ +49 50	h m 13 49	° ′ +18 55	h m 13 56	° ′ −59 51
	s	″	s	″	s	″	s	″
(Dec. 30.8)	13.58 +.34	56.2 −2.2	19.00 +.44	34.5 −2.3	34.59 +.34	55.4 −2.4	13.82 +.58	8.4 −0.6
Jan. 9.8	13.92 .34	58.4 2.1	19.45 .44	32.5 1.8	34.94 .34	53.2 2.1	14.40 .58	9.3 1.1
19.7	14.25 .33	60.4 1.9	19.89 .44	31.0 1.2	35.28 .34	51.2 1.8	14.98 .57	10.6 1.5
29.7	14.57 .31	62.3 1.7	20.33 .43	30.1 −0.6	35.62 .33	49.6 1.4	15.54 .55	12.3 1.9
Feb. 8.7	14.87 .28	63.9 1.5	20.75 .40	29.8 0.0	35.94 .30	48.4 1.0	16.08 .52	14.4 2.2
18.7	15.14 +.25	65.3 −1.2	21.14 +.36	30.1 +0.6	36.23 +.28	47.6 −0.5	16.57 +.47	16.9 −2.6
28.6	15.38 .22	66.4 1.0	21.48 .32	31.0 1.2	36.49 .25	47.3 −0.1	17.02 .42	19.6 2.8
Mar. 10.6	15.58 .18	67.2 0.7	21.77 .26	32.5 1.6	36.72 .21	47.4 +0.3	17.42 .37	22.5 3.0
20.6	15.75 .15	67.8 0.4	22.01 .21	34.3 2.0	36.91 .17	47.8 0.6	17.76 .31	25.6 3.1
30.5	15.89 .12	68.0 −0.1	22.19 .15	36.5 2.3	37.07 .13	48.6 0.9	18.03 .25	28.6 3.1
Apr. 9.5	15.99 +.08	68.0 +0.1	22.31 +.09	39.0 +2.5	37.18 +.10	49.7 +1.2	18.25 +.19	31.7 −3.1
19.5	16.06 .05	67.9 0.3	22.37 +.04	41.6 2.6	37.27 .07	51.0 1.4	18.40 .12	34.8 3.0
29.5	16.10 +.03	67.5 0.4	22.38 −.01	44.2 2.6	37.32 .04	52.4 1.4	18.50 .07	37.7 2.8
May 9.4	16.12 .00	67.1 0.5	22.34 .06	46.8 2.5	37.34 +.01	53.9 1.5	18.54 +.01	40.4 2.6
19.4	16.11 −.02	66.5 0.6	22.26 .10	49.2 2.3	37.33 −.02	55.3 1.4	18.52 −.05	43.0 2.4
29.4	16.08 −.04	65.9 +0.6	22.14 −.14	51.4 +2.0	37.30 −.04	56.8 +1.4	18.44 −.10	45.2 −2.1
June 8.3	16.03 .06	65.2 0.6	21.99 .17	53.2 1.7	37.25 .06	58.1 1.3	18.32 .15	47.2 1.8
18.3	15.96 .07	64.6 0.6	21.81 .19	54.7 1.3	37.18 .08	59.3 1.1	18.14 .20	48.8 1.4
28.3	15.88 .08	64.0 0.6	21.61 .21	55.8 0.9	37.09 .10	60.2 0.9	17.93 .24	50.0 1.0
July 8.3	15.79 .09	63.4 0.6	21.39 .22	56.5 +0.4	36.98 .11	61.0 0.6	17.67 .27	50.7 0.6
18.2	15.69 −.10	62.9 +0.5	21.16 −.23	56.7 0.0	36.87 −.12	61.5 +0.4	17.39 −.29	51.1 −0.1
28.2	15.58 .11	62.4 0.4	20.92 .23	56.4 −0.5	36.74 .13	61.8 +0.2	17.09 .30	51.0 +0.3
Aug. 7.2	15.48 .10	62.0 0.3	20.69 .23	55.7 1.0	36.62 .12	61.8 −0.1	16.78 .31	50.4 0.8
17.2	15.37 .10	61.7 0.2	20.47 .21	54.5 1.4	36.49 .12	61.6 0.4	16.47 .30	49.4 1.2
27.1	15.28 .09	61.6 +0.1	20.26 .19	52.8 1.8	36.37 .11	61.1 0.7	16.19 .27	48.0 1.6
Sept. 6.1	15.20 −.07	61.6 −0.1	20.08 −.16	50.8 −2.2	36.27 −.09	60.3 −0.9	15.93 −.23	46.3 +1.9
16.1	15.15 .04	61.8 0.3	19.93 .13	48.4 2.6	36.19 .07	59.2 1.2	15.73 .17	44.3 2.1
26.0	15.12 −.01	62.2 0.5	19.83 .08	45.6 2.9	36.14 −.04	57.8 1.5	15.59 .11	42.1 2.3
Oct. 6.0	15.13 +.03	62.8 0.7	19.77 −.02	42.6 3.2	36.12 .00	56.1 1.6	15.52 −.03	39.7 2.3
16.0	15.18 .07	63.6 0.9	19.76 +.03	39.2 3.4	36.14 +.04	54.2 2.0	15.53 +.06	37.4 2.3
26.0	15.28 +.12	64.7 −1.2	19.82 +.08	35.7 −3.5	36.21 +.09	52.0 −2.3	15.63 +.15	35.1 +2.2
Nov. 4.9	15.42 .16	66.1 1.5	19.94 .15	32.2 3.6	36.32 .14	49.6 2.5	15.82 .24	33.0 1.9
14.9	15.61 .21	67.7 1.7	20.12 .22	28.5 3.9	36.48 .19	47.1 2.6	16.10 .32	31.2 1.6
24.9	15.84 .25	69.5 1.9	20.37 .28	24.9 3.5	36.69 .23	44.4 2.7	16.47 .40	29.8 1.2
Dec. 4.8	16.11 .28	71.5 2.0	20.68 .33	21.5 3.3	36.95 .27	41.7 2.7	16.91 .47	28.8 0.8
14.8	16.41 +.31	73.6 −2.1	21.04 +.38	18.4 −3.0	37.24 +.30	39.0 −2.6	17.41 +.52	28.2 +0.3
24.8	16.74 .33	75.7 2.2	21.44 .42	15.5 2.6	37.56 .33	36.4 2.5	17.95 .56	28.2 −0.2
34.8	17.08 +.34	77.9 −2.2	21.87 +.44	13.2 −2.1	37.90 +.34	34.0 −2.3	18.53 +.60	28.7 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Draconis.		*α* Bootis. (*Arcturus.*)		*θ* Bootis.		*ρ* Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 14 1	° ′ +64 52	h m 14 10	° ′ +19 44	h m 14 21	° ′ +52 20	h m 14 27	° ′ +30 50
	s	″	s	″	s	″	s	″
(Dec.30.8)	29.03 +.58	55.5 −2.3	45.92 +.34	14.0 −2.6	32.47 +.42	26.7 −2.7	12.22 +.34	16.2 −2.7
Jan. 9.8	29.62 .60	53.5 1.7	46.26 .34	11.6 2.3	32.90 .44	24.3 2.1	12.56 .35	13.7 2.3
19.8	30.23 .61	52.0 1.1	46.60 .34	9.5 1.9	33.35 .45	22.4 1.5	12.92 .36	11.7 1.9
29.7	30.85 .60	51.3 −0.4	46.94 .33	7.8 1.5	33.81 .45	21.1 0.9	13.28 .35	10.0 1.4
Feb. 8.7	31.44 .58	51.2 +0.2	47.26 .31	6.5 1.1	34.26 .43	20.5 −0.3	13.63 .34	8.9 0.9
18.7	32.00 +.53	51.7 +0.9	47.56 +.29	5.6 −0.7	34.68 +.40	20.5 +0.3	13.96 +.32	8.3 −0.3
28.7	32.50 .47	52.9 1.5	47.84 .26	5.1 −0.2	35.07 .36	21.1 0.9	14.26 .29	8.2 +0.2
Mar. 10.6	32.94 .40	54.7 2.0	48.08 .23	5.2 +0.2	35.41 .32	22.3 1.4	14.54 .25	8.7 0.7
20.6	33.29 .31	56.9 2.4	48.29 .19	5.6 0.6	35.70 .27	24.0 1.9	14.77 .22	9.6 1.1
30.6	33.56 .22	59.4 2.7	48.46 .16	6.4 0.9	35.94 .21	26.2 2.3	14.97 .18	10.9 1.5
Apr. 9.5	33.74 +.13	62.2 +2.9	48.60 +.12	7.4 +1.2	36.12 +.15	28.6 +2.5	15.13 +.14	12.6 +1.8
19.5	33.83 +.05	65.2 3.0	48.70 .08	8.7 1.4	36.24 .09	31.3 2.7	15.25 .10	14.5 2.0
29.5	33.83 −.04	68.2 2.9	48.77 .05	10.2 1.5	36.30 +.03	34.0 2.8	15.33 .06	16.5 2.1
May 9.5	33.76 .12	71.1 2.8	48.81 +.02	11.7 1.5	36.30 −.02	36.8 2.7	15.38 +.03	18.6 2.1
19.4	33.60 .19	73.8 2.6	48.82 .00	13.2 1.5	36.26 .07	39.5 2.5	15.39 .00	20.8 2.1
29.4	33.38 −.25	76.2 +2.3	48.80 −.03	14.7 +1.4	36.17 −.11	42.0 +2.3	15.37 −.03	22.8 +2.0
June 8.4	33.10 .30	78.3 1.9	48.76 .05	16.1 1.3	36.03 .15	44.2 2.0	15.33 .06	24.7 1.8
18.4	32.78 .34	79.9 1.4	48.70 .07	17.4 1.2	35.86 .19	46.1 1.7	15.25 .09	26.3 1.5
28.3	32.41 .38	81.1 0.9	48.61 .09	18.5 1.0	35.66 .22	47.5 1.3	15.15 .11	27.7 1.3
July 8.3	32.02 .40	81.8 +0.4	48.51 .11	19.3 0.7	35.42 .24	48.6 0.8	15.03 .13	28.9 1.0
18.3	31.61 −.42	82.0 −0.1	48.39 −.13	19.9 +0.5	35.17 −.26	49.2 +0.4	14.89 −.15	29.6 +0.6
28.2	31.19 .42	81.6 0.6	48.26 .13	20.2 +0.2	34.90 .27	49.3 −0.1	14.73 .16	30.1 +0.2
Aug. 7.2	30.76 .41	80.8 1.1	48.12 .14	20.3 −0.1	34.63 .27	48.9 0.6	14.57 .16	30.2 −0.1
17.2	30.35 .40	79.4 1.6	47.98 .14	20.1 0.4	34.36 .26	48.1 1.1	14.40 .16	29.9 0.5
27.2	29.97 .38	77.6 2.1	47.85 .13	19.6 0.7	34.10 .25	46.8 1.6	14.24 .16	29.2 0.9
Sept. 6.1	29.62 −.33	75.3 −2.5	47.73 −.11	18.8 −1.0	33.86 −.23	45.0 −2.0	14.09 −.14	28.1 −1.2
16.1	29.32 .27	72.6 2.9	47.62 .09	17.7 1.2	33.64 .20	42.8 2.4	13.95 .12	26.7 1.6
26.1	29.07 .21	69.5 3.2	47.55 .06	16.3 1.5	33.46 .15	40.2 2.8	13.84 .09	25.0 1.9
Oct. 6.1	28.90 .14	66.1 3.5	47.50 −.02	14.6 1.8	33.33 .10	37.3 3.1	13.77 .05	22.9 2.2
16.0	28.80 −.05	62.5 3.7	47.50 +.02	12.7 2.1	33.25 −.04	34.0 3.4	13.74 −.01	20.5 2.5
26.0	28.79 +.04	58.7 −3.8	47.54 +.06	10.5 −2.3	33.24 +.02	30.5 −3.6	13.75 +.04	17.8 −2.8
Nov. 5.0	28.87 .13	54.8 3.9	47.63 .11	8.0 2.5	33.29 .08	26.9 3.7	13.82 .09	14.9 3.0
14.9	29.05 .22	50.9 3.8	47.77 .16	5.4 2.7	33.41 .15	23.2 3.7	13.94 .15	11.9 3.1
24.9	29.32 .31	47.1 3.7	47.96 .21	+ 2.6 2.8	33.60 .22	19.4 3.6	14.11 .20	8.8 3.2
Dec. 4.9	29.68 .40	43.5 3.4	48.19 .25	− .2 2.8	33.87 .29	15.8 3.5	14.33 .25	5.6 3.1
14.9	30.12 +.48	40.2 −3.1	48.46 +.29	3.0 −2.7	34.19 +.34	12.4 −3.3	14.60 +.29	+2.5 −3.0
24.8	30.63 .54	37.3 2.6	48.77 .32	5.7 2.6	34.56 .39	9.3 2.9	14.91 .32	−0.4 2.8
34.8	31.19 +.59	34.9 −2.1	49.10 +.34	− 8.2 −2.5	34.97 +.44	6.6 −2.5	15.24 +.35	−3.1 −2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	5 Ursæ Minoris.		α² Centauri.		ε Bootis.		α² Libræ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 14 27	° ′ +76 9	h m 14 32	° ′ −60 23	h m 14 40	° ′ +27 31	h m 14 44	° ′ −15 35
	s	″	s	″	s	″	s	″
(Dec.30.8)	44.18 +.87	58.5 −2.5	17.20 +.56	23.2 0.0	17.84 +.33	20.2 −2.7	56.05 +.33	47.7 −1.6
Jan. 9.8	45.09 .93	56.4 1.8	17.76 .57	23.5 −0.5	18.17 .34	17.7 2.3	56.39 .34	49.3 1.7
19.8	46.04 .96	54.8 1.2	18.34 .58	24.3 1.0	18.52 .35	15.5 1.9	56.73 .34	51.0 1.7
29.7	47.04 1.00	54.0 −0.5	18.92 .57	25.5 1.4	18.87 .34	13.8 1.5	57.07 .34	52.8 1.7
Feb. 8.7	48.03 .98	53.8 +0.1	19.48 .55	27.2 1.8	19.21 .33	12.5 1.0	57.41 .33	54.5 1.6
18.7	48.98 +.92	54.3 +0.8	20.01 +.51	29.2 −2.1	19.54 +.31	11.8 −0.5	57.72 +.31	56.1 −1.5
28.7	49.86 .83	55.4 1.4	20.50 .47	31.5 2.4	19.85 .29	11.5 0.0	58.02 .28	57.5 1.4
Mar. 10.6	50.64 .72	57.1 1.9	20.95 .42	34.0 2.6	20.12 .26	11.8 +0.5	58.29 .25	58.8 1.2
20.6	51.29 .58	59.3 2.4	21.35 .37	36.7 2.8	20.36 .22	12.5 0.9	58.53 .23	60.0 1.0
30.6	51.81 .43	61.8 2.7	21.69 .31	39.5 2.9	20.57 .19	13.6 1.3	58.75 .20	61.0 0.9
Apr. 9.6	52.16 +.27	64.7 +3.0	21.97 +.25	42.4 −2.9	20.74 +.15	15.1 +1.6	58.93 +.17	61.7 −0.7
19.5	52.35 +.11	67.8 3.0	22.19 .19	45.3 2.9	20.87 .11	16.9 1.8	59.09 .14	62.3 0.5
29.5	52.38 −.05	70.9 3.0	22.36 .13	48.2 2.8	20.97 .08	18.8 2.0	59.21 .11	62.8 0.4
May 9.5	52.26 .20	73.9 2.9	22.46 .07	50.9 2.7	21.04 .05	20.8 2.0	59.31 .08	63.1 0.2
19.4	51.99 .34	76.8 2.7	22.50 +.01	53.5 2.5	21.07 +.01	22.8 2.0	59.37 .05	63.3 −0.1
29.4	51.58 −.47	79.4 +2.4	22.48 −.06	55.9 −2.3	21.07 −.02	24.8 +1.9	59.41 +.02	63.4 0.0
June 8.4	51.05 .58	81.6 2.0	22.40 .11	58.1 2.0	21.03 .05	26.7 1.8	59.42 −.01	63.3 +0.1
18.4	50.42 .67	83.5 1.6	22.26 .16	59.9 1.7	20.98 .07	28.4 1.6	59.40 .03	63.2 0.1
28.3	49.70 .75	84.8 1.1	22.07 .21	61.4 1.3	20.89 .10	29.8 1.3	59.36 .06	63.1 0.2
July 8.3	48.92 .80	85.7 0.6	21.83 .26	62.6 0.9	20.78 .12	31.0 1.0	59.29 .08	62.8 0.3
18.3	48.10 −.84	86.0 +0.1	21.56 −.29	63.3 −0.5	20.65 −.14	31.8 +0.7	59.20 −.10	62.5 +0.3
28.3	47.24 .86	85.9 −0.4	21.25 .32	63.6 −0.1	20.51 .15	32.4 +0.4	59.09 .12	62.2 0.4
Aug. 7.2	46.38 .85	85.1 1.0	20.92 .33	63.4 +0.4	20.35 .16	32.6 0.0	58.96 .13	61.8 0.4
17.2	45.54 .83	83.9 1.5	20.59 .33	62.8 0.8	20.19 .16	32.5 −0.3	58.83 .13	61.3 0.4
27.2	44.73 .79	82.1 2.0	20.26 .32	61.8 1.2	20.03 .16	32.0 0.7	58.69 .13	60.9 0.4
Sept. 6.1	43.97 −.72	79.9 −2.4	19.95 −.29	60.4 +1.6	19.87 −.15	31.1 −1.0	58.56 −.12	60.4 +0.4
16.1	43.28 .64	77.3 2.8	19.68 .24	58.7 1.9	19.73 .13	29.9 1.4	58.45 .10	60.0 0.4
26.1	42.69 .54	74.3 3.2	19.47 .18	56.7 2.1	19.62 .10	28.4 1.7	58.36 .07	59.6 0.3
Oct. 6.1	42.21 .42	70.9 3.5	19.32 .11	54.5 2.2	19.54 .06	26.5 2.0	58.30 −.04	59.4 +0.2
16.0	41.86 .28	67.3 3.7	19.26 −.03	52.1 2.3	19.49 −.02	24.3 2.3	58.28 .00	59.2 0.0
26.0	41.65 −.13	63.4 −3.9	19.28 +.07	49.8 +2.2	19.50 +.03	21.9 −2.6	58.31 +.05	59.3 −0.2
Nov. 5.0	41.59 +.03	59.5 3.9	19.39 .16	47.6 2.1	19.55 .08	19.2 2.8	58.38 .10	59.5 0.4
15.0	41.70 .19	55.6 3.9	19.60 .25	45.6 1.9	19.65 .13	16.3 2.9	58.51 .15	60.0 0.6
24.9	41.98 .36	51.7 3.8	19.90 .34	43.8 1.6	19.81 .18	13.3 3.0	58.69 .20	60.7 0.8
Dec. 4.9	42.42 .51	48.1 3.5	20.29 .42	42.5 1.2	20.02 .23	10.2 3.0	58.91 .24	61.7 1.1
14.9	43.01 +.66	44.7 −3.2	20.74 +.48	41.5 +0.7	20.28 +.27	7.2 −3.0	59.18 +.28	62.9 −1.3
24.8	43.73 .78	41.7 2.7	21.26 .53	41.0 +0.2	20.57 .31	4.3 2.8	59.48 .31	64.3 1.5
34.8	44.57 +.89	39.2 −2.2	21.81 +.57	41.0 −0.2	20.89 +.34	1.6 −2.6	59.81 +.34	65.8 −1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ursæ Minoris.		β Bootis.		β Libræ.		μ¹ Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 14 50	° ′ +74 35	h m 14 57	° ′ +40 48	h m 15 11	° ′ − 8 59	h m 15 20	° ′ +37 44
	s	″	s	″	s	″	s	″
(Dec.30.8)	59.63 +.74	+14.9 −2.7	53.81 +.34	31.1 −2.9	13.44 +.31	18.3 −1.7	25.62 +.31	55.7 −3.0
Jan. 9.8	60.41 .81	12.5 2.1	54.16 .36	28.4 2.5	13.75 .32	20.0 1.7	25.95 .34	52.9 2.6
19.8	61.25 .87	10.6 1.5	54.54 .38	26.2 2.0	14.08 .33	21.7 1.7	26.30 .36	50.4 2.2
29.8	62.14 .89	9.4 0.9	54.92 .38	24.4 1.5	14.41 .33	23.4 1.6	26.66 .37	48.5 1.7
Feb. 8.7	63.04 .89	8.8 −0.2	55.30 .38	23.2 0.9	14.74 .32	25.0 1.5	27.03 .36	47.1 1.1
18.7	63.92 +.85	9.0 +0.5	55.67 +.36	22.6 −0.3	15.06 +.31	26.4 −1.3	27.39 +.35	46.2 −0.5
28.7	64.74 .79	9.8 1.1	56.02 .33	22.6 +0.3	15.36 .29	27.6 1.1	27.74 .33	46.0 0.0
Mar.10.7	65.50 .70	11.2 1.7	56.34 .30	23.1 0.8	15.64 .27	28.6 0.9	28.06 .30	46.3 +0.6
20.6	66.15 .59	13.2 2.2	56.62 .26	24.2 1.3	15.89 .24	29.4 0.7	28.35 .27	47.2 1.1
30.6	66.68 .46	15.6 2.6	56.86 .22	25.8 1.8	16.12 .22	30.0 0.5	28.60 .24	48.5 1.6
Apr. 9.6	67.07 +.32	18.4 +2.9	57.07 +.18	27.8 +2.1	16.32 +.19	30.3 −0.3	28.82 +.20	50.3 +1.9
19.5	67.33 .18	21.4 3.0	57.22 .14	30.1 2.4	16.50 .16	30.5 −0.1	29.00 .16	52.4 2.2
29.5	67.44 +.04	24.5 3.1	57.34 .09	32.5 2.5	16.65 .13	30.5 +0.1	29.15 .12	54.8 2.4
May 9.5	67.42 −.10	27.6 3.0	57.41 .05	35.1 2.6	16.76 .10	30.3 0.2	29.25 .08	57.3 2.5
19.5	67.25 .23	30.5 2.9	57.44 +.01	37.6 2.5	16.85 .07	30.0 0.3	29.30 +.04	59.8 2.5
29.4	66.96 −.35	33.3 +2.6	57.43 −.03	40.1 +2.4	16.91 +.04	29.7 +0.3	29.32 .00	62.3 +2.4
June 8.4	66.55 .46	35.8 2.3	57.38 .07	42.4 2.2	16.94 +.01	29.3 0.4	29.30 −.04	64.7 2.3
18.4	66.03 .56	37.9 1.9	57.30 .10	44.5 1.9	16.94 −.01	28.9 0.4	29.25 .07	66.9 2.0
28.4	65.44 .64	39.6 1.4	57.18 .13	46.3 1.6	16.92 .04	28.5 0.4	29.16 .11	68.9 1.8
July 8.3	64.76 .70	40.8 0.9	57.03 .16	47.8 1.3	16.86 .07	28.0 0.4	29.04 .14	70.5 1.5
18.3	64.04 −.74	41.5 +0.4	56.86 −.18	48.8 +0.9	16.78 −.09	27.6 +0.4	28.88 −.16	71.7 +1.1
28.3	63.27 .77	41.7 −0.1	56.67 .20	49.5 +0.5	16.68 .11	27.2 0.4	28.71 .18	72.6 0.7
Aug. 7.3	62.49 .78	41.3 0.6	56.46 .21	49.7 0.0	16.56 .13	26.8 0.4	28.51 .20	73.1 +0.3
17.2	61.71 .78	40.4 1.1	56.25 .21	49.5 −0.4	16.43 .14	26.4 0.3	28.31 .21	73.2 −0.1
27.2	60.94 .75	39.0 1.6	56.03 .21	48.9 0.9	16.29 .14	26.1 0.3	28.10 .21	72.8 0.6
Sept. 6.2	60.21 −.70	37.1 −2.1	55.82 −.20	47.8 −1.3	16.15 −.13	25.8 +0.2	27.89 −.20	72.1 −1.0
16.1	59.53 .64	34.8 2.5	55.63 .18	46.3 1.7	16.03 .12	25.7 +0.1	27.69 .19	70.8 1.4
26.1	58.93 .55	32.0 2.9	55.46 .15	44.4 2.1	15.92 .09	25.6 0.0	27.51 .17	69.2 1.8
Oct. 6.1	58.42 .45	28.9 3.3	55.32 .11	42.1 2.5	15.84 .06	25.7 −0.1	27.36 .13	67.2 2.2
16.1	58.02 .34	25.5 3.6	55.23 .06	39.4 2.8	15.80 −.02	25.9 0.3	27.25 .09	64.8 2.6
26.0	57.75 −.20	21.8 −3.8	55.19 −.01	36.4 −3.1	15.80 +.02	26.3 −0.5	27.19 −.04	62.1 −2.9
Nov. 5.0	57.62 −.06	17.9 3.9	55.21 +.04	33.3 3.3	15.84 .07	26.9 0.7	27.18 +.02	59.1 3.1
15.0	57.63 +.09	14.0 3.9	55.28 .10	29.9 3.4	15.94 .12	27.7 0.9	27.22 .07	55.9 3.3
24.9	57.80 .24	10.1 3.8	55.41 .16	26.4 3.5	16.09 .17	28.8 1.1	27.33 .13	52.6 3.4
Dec. 4.9	58.12 .38	6.3 3.7	55.61 .22	22.9 3.4	16.28 .22	30.0 1.3	27.49 .19	49.2 3.4
14.9	58.58 +.53	+ 2.8 −3.4	55.85 +.27	19.5 −3.3	16.52 +.26	31.5 −1.5	27.71 +.24	45.8 −3.3
24.9	59.18 .65	− .4 3.0	56.15 .32	16.3 3.1	16.80 .29	33.0 1.6	27.97 .28	42.5 3.1
34.8	59.89 +.77	− 3.2 −2.5	56.48 +.36	13.4 −2.8	17.10 +.32	34.7 −1.7	28.28 +.32	39.5 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^1 Ursæ Minoris.		α Coronæ Borealis.		α Serpentis.		ε Serpentis.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
	$15^{h}\ 20^{m}$	$+72^{\circ}\ 12'$	$15^{h}\ 30^{m}$	$+27^{\circ}\ 4'$	$15^{h}\ 38^{m}$	$+\ 6^{\circ}\ 45'$	$15^{h}\ 45^{m}$	$+\ 4^{\circ}\ 47'$
	s	″	s	″	s	″	s	″
(Dec.30.9)	52.07 +.59	34.7 −3.0	8.12 +.29	18.2 −2.9	58.37 +.28	37.8 −2.2	27.42 +.28	53.9 −2.1
Jan. 9.8	52.70 .66	32.0 2.5	8.42 .31	15.5 2.6	58.66 .30	35.6 2.1	27.71 .29	51.8 2.0
19.8	53.40 .73	29.7 1.9	8.75 .33	13.1 2.2	58.97 .31	33.5 1.9	28.01 .31	49.8 1.9
29.8	54.16 .77	28.1 1.3	9.09 .34	11.1 1.8	59.29 .32	31.7 1.7	28.33 .32	47.9 1.7
Feb. 8.8	54.94 .78	27.1 −0.6	9.43 .34	9.6 1.3	59.61 .32	30.1 1.4	28.65 .32	46.4 1.4
18.7	55.72 +.77	26.8 0.0	9.76 +.33	8.5 −0.8	59.93 +.31	28.9 −1.1	28.97 +.31	45.1 −1.1
28.7	56.48 .73	27.2 +0.7	10.08 .31	8.0 −0.3	60.23 .29	28.0 0.7	29.27 .30	44.2 0.8
Mar. 10.7	57.18 .67	28.2 1.3	10.38 .29	8.0 +0.2	60.51 .27	27.4 −0.4	29.56 .28	43.6 0.4
20.7	57.81 .58	29.9 1.9	10.66 .26	8.4 0.7	60.78 .25	27.2 0.0	29.83 .26	43.3 −0.1
30.6	58.35 .48	32.0 2.4	10.90 .23	9.4 1.1	61.02 .23	27.4 +0.3	30.08 .24	43.4 +0.2
Apr. 9.6	58.78 +.37	34.5 +2.7	11.12 +.20	10.7 +1.5	61.24 +.20	27.8 +0.6	30.30 +.21	43.8 +0.5
19.6	59.10 .26	37.4 3.0	11.30 .17	12.4 1.8	61.43 .18	28.6 0.8	30.50 .18	44.5 0.7
29.5	59.29 .14	40.5 3.1	11.45 .13	14.3 2.0	61.59 .15	29.5 1.0	30.67 .15	45.4 0.9
May 9.5	59.37 +.01	43.6 3.1	11.57 .10	16.4 2.1	61.73 .12	30.6 1.1	30.81 .13	46.4 1.1
19.5	59.32 −.11	46.7 3.0	11.65 .06	18.6 2.2	61.83 .09	31.9 1.2	30.92 .10	47.5 1.2
29.5	59.16 −.22	49.7 +2.8	11.70 +.03	20.8 +2.1	61.91 +.06	33.1 +1.3	31.00 +.07	48.7 +1.2
June 8.4	58.89 .32	52.5 2.6	11.71 .00	22.9 2.0	61.95 +.03	34.4 1.3	31.05 +.04	49.9 1.2
18.4	58.52 .41	54.9 2.2	11.69 −.04	24.8 1.8	61.97 .00	35.6 1.2	31.07 .00	51.0 1.1
28.4	58.06 .50	56.9 1.8	11.63 .07	26.6 1.6	61.95 −.03	36.8 1.1	31.06 −.03	52.1 1.0
July 8.4	57.52 .57	58.6 1.4	11.55 .10	28.1 1.4	61.90 .06	37.8 1.0	31.02 .06	53.1 0.9
18.3	56.92 −.62	59.7 +0.9	11.44 −.13	29.4 +1.1	61.83 −.09	38.7 +0.8	30.95 −.08	54.0 +0.8
28.3	56.28 .66	60.4 +0.4	11.30 .15	30.3 0.8	61.73 .11	39.4 0.6	30.85 .11	54.7 0.7
Aug. 7.3	55.60 .68	60.5 −0.1	11.14 .16	30.9 +0.4	61.61 .13	40.0 0.5	30.73 .13	55.2 0.5
17.2	54.91 .69	60.1 0.6	10.97 .17	31.2 0.0	61.47 .14	40.4 0.3	30.60 .14	55.6 0.3
27.2	54.21 .69	59.2 1.2	10.79 .18	31.0 −0.3	61.32 .15	40.6 +0.1	30.45 .15	55.9 +0.1
Sept. 6.2	53.53 −.66	57.8 −1.7	10.61 −.17	30.6 −0.7	61.17 −.15	40.5 −0.1	30.30 −.15	55.9 −0.1
16.2	52.89 .62	55.8 2.2	10.44 .16	29.7 1.0	61.03 .14	40.3 0.4	30.16 .14	55.7 0.3
26.1	52.30 .55	53.4 2.6	10.29 .14	28.5 1.4	60.90 .12	39.8 0.6	30.03 .12	55.3 0.5
Oct. 6.1	51.78 .47	50.6 3.0	10.16 .11	26.9 1.8	60.79 .09	39.1 0.8	29.92 .09	54.7 0.7
16.1	51.35 .38	47.5 3.3	10.07 .07	25.0 2.1	60.72 .05	38.1 1.1	29.84 .06	53.8 1.0
26.1	51.03 −.27	44.0 −3.6	10.02 −.03	22.8 −2.4	60.69 −.01	36.9 −1.3	29.80 −.02	52.7 −1.2
Nov. 5.0	50.82 .14	40.3 3.8	10.01 +.02	20.3 2.6	60.69 +.03	35.4 1.6	29.81 +.03	51.4 1.4
15.0	50.74 −.01	36.5 3.9	10.06 .08	17.5 2.8	60.75 .08	33.7 1.8	29.86 .08	49.8 1.6
25.0	50.79 +.12	32.6 3.9	10.17 .13	14.6 3.0	60.86 .13	31.8 2.0	29.96 .13	48.1 1.8
Dec. 4.9	50.98 .26	28.7 3.8	10.32 .18	11.6 3.0	61.02 .18	29.8 2.1	30.12 .18	46.1 2.0
14.9	51.31 +.39	25.0 −3.6	10.53 +.23	8.5 −3.0	61.22 +.22	27.6 −2.2	30.31 +.22	44.1 −2.1
24.9	51.76 .51	21.6 3.3	10.77 .27	5.5 2.9	61.46 .26	25.4 2.2	30.55 .25	41.9 2.1
34.9	52.32 +.62	18.6 −2.9	11.06 +.30	2.6 −2.8	61.74 +.30	23.2 −2.2	30.82 +.29	39.8 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursæ Minoris.		ε Coronæ Borealis.		δ Scorpii.		β¹ Scorpii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 15 47	° ′ +78 6	h m 15 53	° ′ +27 10	h m 15 53	° ′ −22 19	h m 15 59	° ′ −19 30
	s	″	s	″	s	″	s	″
(Dec.30.9)	49.96 +.70	66.7 −3.2	8.05 +.27	64.9 −2.9	58.53 +.30	1.0 −0.9	11.10 +.29	45.6 −1.0
Jan. 9.9	50.73 .84	63.8 2.7	8.34 .30	62.1 2.6	58.84 .32	2.0 1.0	11.40 .31	46.7 1.1
19.8	51.64 .96	61.3 2.2	8.65 .32	59.6 2.3	59.18 .34	3.1 1.1	11.72 .33	47.8 1.2
29.8	52.65 1.05	59.4 1.6	8.98 .33	57.5 1.9	59.52 .35	4.2 1.2	12.06 .34	49.0 1.2
Feb. 8.8	53.73 1.10	58.2 0.9	9.31 .33	55.8 1.4	59.87 .35	5.4 1.2	12.40 .34	50.3 1.2
18.7	54.85+1.11	57.6 −0.2	9.64 +.33	54.6 −0.9	60.22 +.34	6.7 −1.2	12.74 +.33	51.5 −1.1
28.7	55.95 1.07	57.8 +0.4	9.97 .32	54.0 −0.4	60.55 .33	7.8 1.1	13.07 .32	52.6 1.1
Mar.10.7	56.99 1.00	58.5 1.0	10.28 .30	53.8 +0.1	60.87 .31	8.9 1.0	13.39 .31	53.6 1.0
20.7	57.96 .90	59.9 1.6	10.57 .28	54.2 0.6	61.17 .29	9.9 0.9	13.68 .29	54.5 0.9
30.6	58.80 .77	61.8 2.1	10.83 .25	55.1 1.1	61.45 .27	10.8 0.8	13.96 .27	55.2 0.7
Apr. 9.6	59.50 +.62	64.2 +2.5	11.06 +.22	56.4 +1.5	61.70 +.24	11.6 −0.7	14.21 +.24	55.9 −0.6
19.6	60.03 .45	67.0 2.8	11.27 .19	58.0 1.8	61.93 .21	12.3 0.6	14.44 .21	56.4 0.5
29.6	60.40 .27	69.9 3.0	11.44 .16	59.9 2.0	62.14 .19	12.9 0.5	14.65 .19	56.8 0.4
May 9.5	60.57 +.08	73.1 3.1	11.58 .12	62.1 2.2	62.31 .16	13.4 0.4	14.82 .16	57.1 0.3
19.5	60.56 −.10	76.2 3.1	11.68 .08	64.3 2.2	62.45 .13	13.8 0.4	14.97 .13	57.4 0.2
29.5	60.37 −.28	79.3 +3.0	11.75 +.05	66.6 +2.2	62.56 +.09	14.1 −0.3	15.08 +.10	57.5 −0.1
June 8.4	60.01 .44	82.2 2.8	11.79 +.01	68.8 2.1	62.64 .06	14.4 0.3	15.16 .06	57.6 −0.1
18.4	59.48 .59	84.8 2.5	11.78 −.02	70.9 2.0	62.68 +.02	14.7 0.2	15.21 +.03	57.7 0.0
28.4	58.81 .73	87.1 2.1	11.75 .05	72.8 1.8	62.69 −.01	14.8 0.1	15.22 −.01	57.7 0.0
July 8.4	58.02 .85	89.0 1.7	11.68 .09	74.5 1.6	62.66 .05	14.9 −0.1	15.19 .04	57.7 0.0
18.3	57.11 −.95	90.4 +1.2	11.57 −.12	75.9 +1.3	62.60 −.08	15.0 0.0	15.14 −.07	57.7 +0.1
28.3	56.12 1.02	91.4 0.7	11.44 .14	77.0 1.0	62.50 .11	14.9 +0.1	15.05 .10	57.6 0.1
Aug. 7.3	55.07 1.07	91.8 +0.2	11.29 .16	77.8 0.6	62.38 .13	14.8 0.2	14.93 .13	57.4 0.2
17.3	53.97 1.10	91.7 −0.3	11.12 .18	78.3 +0.2	62.24 .15	14.6 0.2	14.80 .14	57.2 0.2
27.2	52.86 1.09	91.1 0.8	10.93 .19	78.4 −0.1	62.09 .16	14.3 0.3	14.65 .15	56.9 0.3
Sept. 6.2	51.76−1.08	90.0 −1.3	10.74 −.18	78.1 −0.5	61.93 −.16	14.0 +0.4	14.49 −.15	56.6 +0.3
16.2	50.70 1.03	88.4 1.8	10.56 .18	77.4 0.9	61.78 .15	13.6 0.4	14.34 .15	56.3 0.3
26.1	49.71 .95	86.3 2.3	10.39 .16	76.3 1.2	61.64 .13	13.1 0.4	14.20 .13	55.9 0.3
Oct. 6.1	48.80 .85	83.8 2.7	10.24 .13	74.9 1.6	61.52 .10	12.7 0.4	14.08 .10	55.6 0.3
16.1	48.01 .72	80.9 3.1	10.13 .09	73.1 1.9	61.44 .06	12.3 0.4	14.00 .06	55.3 0.2
26.1	47.36 −.57	77.7 −3.4	10.05 −.05	71.0 −2.2	61.40 −.02	11.9 +0.3	13.95 −.02	55.2 +0.1
Nov. 5.0	46.87 .40	74.2 3.6	10.02 .00	68.6 2.5	61.41 +.03	11.7 +0.2	13.96 +.03	55.1 0.0
15.0	46.57 .21	70.5 3.7	10.04 +.05	65.9 2.8	61.47 .09	11.6 0.0	14.01 .08	55.2 −0.2
25.0	46.45 −.01	66.7 3.8	10.12 .10	63.1 2.9	61.59 .14	11.7 −0.2	14.12 .13	55.4 0.3
Dec. 5.0	46.54 +.19	62.8 3.7	10.25 .15	60.1 3.0	61.76 .19	12.0 0.4	14.28 .18	55.8 0.5
14.9	46.83 +.38	59.1 −3.6	10.43 +.20	57.0 −3.0	61.98 +.24	12.5 −0.6	14.49 +.23	56.5 −0.7
24.9	47.31 .57	55.6 3.4	10.65 .24	54.0 3.0	62.24 .28	13.1 0.8	14.74 .27	57.3 0.9
34.9	47.97 +.75	52.4 −3.1	10.92 +.28	51.1 −2.8	62.54 +.31	14.0 −0.9	15.03 +.30	58.2 −1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 2320.		δ Ophiuchi.		τ Herculis.		η Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$16^{h}\ 5^{m}$	$+68^{\circ}\ 5'$	$16^{h}\ 8^{m}$	$-\ 3^{\circ}\ 25'$	$16^{h}\ 16^{m}$	$+46^{\circ}\ 33'$	$16^{h}\ 22^{m}$	$+61^{\circ}\ 44'$
	s	″	s	″	s	″	s	″
(Dec. 30.9)	59.27 +.41	14.9 −3.4	42.62 +.27	11.9 −1.7	29.77 +.27	50.9 −3.4	30.51 +.32	67.4 −3.5
Jan. 9.9	59.71 .48	11.7 3.0	42.90 .29	13.7 1.7	30.06 .31	47.7 3.0	30.86 .38	64.0 3.2
19.8	60.23 .55	9.0 2.5	43.20 .30	15.4 1.6	30.40 .35	44.9 2.6	31.27 .44	61.1 2.7
29.8	60.81 .60	6.8 1.9	43.51 .31	17.0 1.5	30.76 .37	42.5 2.1	31.74 .48	58.7 2.1
Feb. 8.8	61.44 .63	5.2 1.3	43.83 .32	18.4 1.3	31.15 .39	40.7 1.5	32.24 .51	56.9 1.5
18.8	62.09 +.64	4.3 −0.6	44.14 +.31	19.6 −1.1	31.54 +.39	39.4 −0.9	32.76 +.52	55.7 −0.9
28.7	62.73 .63	4.0 +0.1	44.45 .30	20.6 0.9	31.93 .38	38.8 −0.3	33.29 .52	55.1 −0.2
Mar. 10.7	63.35 .60	4.5 0.8	44.75 .29	21.4 0.6	32.31 .37	38.9 +0.3	33.80 .50	55.3 +0.5
20.7	63.93 .55	5.5 1.4	45.03 .27	21.8 −0.3	32.67 .34	39.5 0.9	34.29 .47	56.1 1.1
30.7	64.46 .49	7.2 1.9	45.30 .25	22.0 0.0	33.00 .31	40.7 1.5	34.73 .42	57.5 1.7
Apr. 9.6	64.91 +.41	9.4 +2.4	45.54 +.23	21.9 +0.2	33.29 +.26	42.5 +2.0	35.13 +.37	59.5 +2.2
19.6	65.28 .33	12.0 2.7	45.76 .21	21.6 0.4	33.55 .23	44.7 2.3	35.47 .30	61.9 2.6
29.6	65.56 .23	14.9 3.0	45.95 .18	21.1 0.5	33.76 .19	47.2 2.6	35.74 .23	64.7 2.9
May 9.5	65.75 .14	18.0 3.2	46.12 .15	20.5 0.6	33.93 .14	50.0 2.8	35.94 .16	67.7 3.1
19.5	65.83 +.04	21.2 3.2	46.26 .12	19.8 0.7	34.05 .09	52.9 2.9	36.06 .09	70.9 3.2
29.5	65.82 −.06	24.3 +3.1	46.37 +.09	19.0 +0.8	34.12 +.04	55.8 +2.9	36.11 +.01	74.1 +3.1
June 8.5	65.72 .15	27.4 2.9	46.45 .06	18.2 0.8	34.14 .00	58.7 2.8	36.09 −.06	77.2 3.0
18.4	65.52 .24	30.2 2.7	46.50 +.03	17.4 0.8	34.11 −.05	61.5 2.6	35.99 .13	80.1 2.8
28.4	65.24 .32	32.8 2.4	46.51 .00	16.6 0.7	34.04 .10	64.0 2.4	35.82 .20	82.9 2.5
July 8.4	64.88 .39	35.0 2.0	46.49 −.03	15.8 0.7	33.92 .14	66.2 2.1	35.59 .26	85.2 2.2
18.4	64.46 −.45	36.8 +1.6	46.44 −.07	15.2 +0.6	33.75 −.18	68.1 +1.7	35.29 −.30	87.2 +1.8
28.3	63.97 .51	38.1 1.1	46.35 .10	14.6 0.5	33.55 .21	69.6 1.3	34.95 .36	88.8 1.4
Aug. 7.3	63.44 .55	38.9 0.6	46.24 .12	14.1 0.4	33.32 .24	70.7 0.9	34.56 .40	90.0 0.9
17.3	62.88 .57	39.3 +0.1	46.11 .14	13.8 0.3	33.06 .26	71.3 +0.4	34.14 .43	90.6 +0.4
27.2	62.30 .58	39.1 −0.4	45.97 .15	13.5 0.2	32.79 .27	71.5 −0.1	33.70 .45	90.7 −0.1
Sept. 6.2	61.71 −.58	38.4 −1.0	45.82 −.15	13.4 +0.1	32.51 −.28	71.2 −0.6	33.25 −.45	90.3 −0.6
16.2	61.14 .56	37.2 1.5	45.67 .14	13.3 0.0	32.23 .27	70.4 1.0	32.80 .44	89.4 1.1
26.2	60.59 .52	35.4 2.0	45.53 .13	13.4 −0.2	31.96 .25	69.1 1.5	32.37 .41	88.0 1.6
Oct. 6.1	60.09 .47	33.2 2.4	45.41 .11	13.7 0.4	31.72 .22	67.4 1.9	31.97 .37	86.1 2.1
16.1	59.65 .40	30.6 2.8	45.32 .07	14.2 0.5	31.52 .18	65.2 2.3	31.62 .32	83.7 2.6
26.1	59.29 −.32	27.6 −3.2	45.27 −.03	14.8 −0.7	31.35 −.14	62.6 −2.7	31.32 −.26	80.9 −3.0
Nov. 5.1	59.02 .22	24.2 3.5	45.25 +.02	15.6 0.9	31.24 .08	59.7 3.0	31.10 .18	77.8 3.3
15.0	58.85 −.12	20.6 3.7	45.29 .06	16.6 1.1	31.19 −.02	56.5 3.3	30.96 .10	74.3 3.5
25.0	58.79 .00	16.8 3.8	45.38 .11	17.9 1.3	31.21 +.05	53.1 3.5	30.90 −.01	70.7 3.7
Dec. 5.0	58.85 +.12	13.0 3.9	45.52 .16	19.2 1.5	31.29 .11	49.5 3.6	30.94 +.08	66.9 3.8
14.9	59.01 +.22	9.2 −3.7	45.70 +.20	20.8 −1.6	31.43 +.17	45.8 −3.6	31.07 +.17	63.1 −3.7
24.9	59.30 .33	5.5 3.6	45.92 .24	22.4 1.7	31.64 .23	42.3 3.5	31.28 .26	59.4 3.6
34.9	59.68 +.44	2.1 −3.3	46.18 +.27	24.1 −1.7	31.90 +.29	38.9 −3.3	31.58 +.34	55.9 −3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Scorpii. (*Antares.*)		β Herculis.		A Draconis.		ζ Ophiuchi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 16 22	° ′ −26 11	h m 16 25	° ′ +21 43	h m 16 28	° ′ +68 59	h m 16 31	° ′ −10 21
	s	″	s	″	s	″	s	″
(Dec.30.9)	48.77 +.28	40.3 −0.5	35.59 +.24	12.3 −2.8	9.08 +.36	42.1 −3.5	14.20 +.26	4.9 −1.3
Jan. 9.9	49.07 .31	40.9 0.7	35.85 .27	9.6 2.6	9.48 .45	38.8 3.1	14.47 .28	6.2 1.3
19.9	49.39 .33	41.6 0.8	36.13 .29	7.2 2.3	9.98 .53	35.8 2.7	14.76 .30	7.5 1.3
29.8	49.74 .35	42.5 0.9	36.44 .31	5.0 2.0	10.54 .59	33.4 2.1	15.07 .31	8.8 1.3
Feb. 8.8	50.09 .35	43.4 0.9	36.76 .32	3.2 1.6	11.17 .64	31.6 1.5	15.39 .32	10.0 1.2
18.8	50.44 +.35	44.3 −1.0	37.08 +.32	1.9 −1.1	11.82 +.66	30.4 −0.9	15.71 +.32	11.1 −1.0
28.7	50.79 .34	45.3 0.9	37.39 .31	1.0 0.6	12.48 .66	29.8 −0.2	16.03 .31	12.0 0.8
Mar. 10.7	51.13 .33	46.2 0.9	37.70 .30	0.7 −0.1	13.14 .64	30.0 +0.5	16.34 .30	12.8 0.6
20.7	51.45 .31	47.1 0.8	38.00 .28	0.8 +0.4	13.76 .60	30.8 1.1	16.64 .29	13.3 0.4
30.7	51.76 .29	47.9 0.8	38.27 .26	1.4 0.8	14.33 .54	32.3 1.7	16.92 .27	13.6 −0.2
Apr. 9.6	52.04 +.27	48.7 −0.7	38.52 +.24	2.4 +1.2	14.84 +.47	34.3 +2.2	17.18 +.25	13.7 0.0
19.6	52.31 .25	49.4 0.7	38.75 .21	3.8 1.5	15.27 .38	36.7 2.6	17.42 .23	13.7 +0.1
29.6	52.54 .22	50.0 0.6	38.95 .18	5.5 1.8	15.60 .29	39.5 2.9	17.64 .21	13.5 0.3
May 9.6	52.75 .19	50.6 0.6	39.12 .15	7.4 2.0	15.85 .19	42.6 3.1	17.84 .18	13.2 0.4
19.5	52.93 .16	51.1 0.5	39.26 .12	9.5 2.1	15.99 +.09	45.7 3.2	18.01 .15	12.7 0.4
29.5	53.07 +.13	51.6 −0.5	39.37 +.09	11.6 +2.1	16.02 −.01	49.0 +3.2	18.14 +.12	12.3 +0.5
June 8.5	53.18 .09	52.1 0.4	39.44 .05	13.7 2.1	15.96 .11	52.1 3.1	18.25 .09	11.8 0.5
18.4	53.25 .05	52.5 0.4	39.47 +.01	15.8 2.0	15.80 .21	55.1 2.8	18.32 .05	11.3 0.5
28.4	53.28 +.01	52.9 0.3	39.47 −.02	17.7 1.8	15.54 .30	57.9 2.6	18.35 +.02	10.8 0.5
July 8.4	53.28 −.02	53.2 0.3	39.43 .05	19.4 1.6	15.20 .38	60.3 2.2	18.35 −.02	10.3 0.4
18.4	53.23 −.06	53.4 −0.2	39.36 −.09	21.0 +1.4	14.78 −.45	62.3 +1.8	18.32 −.05	9.9 +0.4
28.3	53.15 .10	53.6 −0.1	39.26 .12	22.2 1.1	14.30 .51	64.0 1.4	18.25 .08	9.5 0.3
Aug. 7.3	53.04 .13	53.7 0.0	39.12 .14	23.2 0.8	13.75 .56	65.1 0.9	18.15 .11	9.2 0.3
17.3	52.90 .15	53.7 +0.1	38.97 .16	23.9 0.5	13.17 .60	65.8 +0.4	18.02 .13	8.9 0.3
27.3	52.74 .16	53.5 0.2	38.80 .17	24.2 +0.2	12.56 .62	65.9 −0.1	17.88 .15	8.7 0.2
Sept. 6.2	52.57 −.17	53.3 +0.3	38.62 −.18	24.2 −0.2	11.93 −.62	65.5 −0.6	17.73 −.15	8.5 +0.2
16.2	52.41 .16	52.9 0.4	38.43 .18	23.9 0.5	11.31 .61	64.6 1.1	17.57 .15	8.4 +0.1
26.2	52.25 .15	52.5 0.4	38.26 .17	23.2 0.8	10.71 .58	63.2 1.6	17.42 .14	8.3 0.0
Oct. 6.1	52.11 .12	52.0 0.5	38.10 .14	22.2 1.2	10.15 .53	61.3 2.1	17.29 .12	8.4 −0.1
16.1	52.00 .09	51.5 0.5	37.97 .11	20.8 1.5	9.64 .47	58.9 2.6	17.19 .09	8.5 0.2
26.1	51.94 −.04	51.0 +0.5	37.88 −.07	19.1 −1.8	9.21 −.38	56.2 −3.0	17.12 −.05	8.7 −0.3
Nov. 5.1	51.92 +.01	50.6 0.4	37.82 −.03	17.1 2.1	8.88 .29	53.0 3.3	17.09 .00	9.2 0.5
15.0	51.95 .06	50.2 0.3	37.82 +.02	14.8 2.4	8.63 .19	49.5 3.6	17.11 +.04	9.7 0.6
25.0	52.04 .12	50.0 +0.1	37.87 .07	12.3 2.6	8.50 −.07	45.9 3.7	17.18 .09	10.5 0.8
Dec. 5.0	52.19 .17	50.0 0.0	37.97 .12	9.6 2.7	8.48 +.05	42.1 3.8	17.30 .14	11.4 1.0
15.0	52.38 +.22	50.1 −0.2	38.11 +.17	6.8 −2.8	8.59 +.17	38.3 −3.8	17.47 +.19	12.4 −1.1
24.9	52.62 .26	50.4 0.4	38.31 .21	4.0 2.8	8.82 .28	34.5 3.6	17.68 .24	13.6 1.2
34.9	52.91 +.30	50.8 −0.6	38.54 +.25	1.3 −2.7	9.15 +.39	31.0 −3.4	17.93 +.27	14.9 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Trianguli Australis.		η Herculis.		κ Ophiuchi.		ε Ursæ Minoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 16 37	° ′ −68 49	h m 16 39	° ′ +39 7	h m 16 52	° ′ + 9 32	h m 16 56	° ′ +82 12
	s	″	s	″	s	″	s	″
(Dec.30.9)	15.48 +.57	45.3 +1.7	11.86 +.24	20.3 −3.3	34.49 +.22	21.4 −2.2	49.64+ .54	31.2 −3.5
Jan. 9.9	16.09 .64	43.8 1.4	12.12 .28	17.1 3.0	34.73 .25	19.2 2.1	50.31 .81	27.8 3.2
19.8	16.77 .71	42.6 1.0	12.41 .31	14.3 2.7	34.99 .27	17.2 2.0	51.26 1.06	24.8 2.8
29.8	17.50 .75	41.8 0.6	12.74 .33	11.8 2.2	35.27 .29	15.3 1.8	52.44 1.28	22.3 2.3
Feb. 8.8	18.28 .78	41.4 +0.1	13.08 .35	9.8 1.7	35.57 .30	13.7 1.5	53.81 1.45	20.3 1.7
18.8	19.07 +.79	41.5 −0.3	13.43 +.35	8.3 −1.2	35.88 +.30	12.3 −1.1	55.33+1.55	18.9 −1.1
28.7	19.86 .78	42.0 0.7	13.79 .35	7.5 −0.6	36.18 .30	11.4 0.7	56.92 1.60	18.1 −0.4
Mar. 10.7	20.64 .77	42.9 1.0	14.14 .34	7.2 0.0	36.48 .30	10.8 −0.3	58.54 1.60	18.0 +0.2
20.7	21.39 .74	44.1 1.4	14.48 .32	7.5 +0.6	36.78 .29	10.7 0.0	60.11 1.53	18.5 0.8
30.7	22.11 .69	45.6 1.7	14.79 .30	8.5 1.2	37.06 .27	10.9 +0.4	61.59 1.40	19.7 1.4
Apr. 9.6	22.78 +.64	47.5 −2.0	15.08 +.27	9.9 +1.7	37.32 +.25	11.5 +0.7	62.91+1.22	21.3 +1.9
19.6	23.39 .58	49.6 2.2	15.35 .24	11.8 2.1	37.57 .23	12.4 1.0	64.04 1.02	23.5 2.4
29.6	23.94 .51	51.9 2.4	15.57 .21	14.1 2.4	37.79 .21	13.6 1.3	64.94 .77	26.1 2.7
May 9.5	24.41 .43	54.3 2.5	15.76 .17	16.6 2.6	37.99 .18	15.0 1.5	65.59 .51	29.0 3.0
19.5	24.80 .34	56.9 2.6	15.91 .13	19.3 2.7	38.16 .15	16.5 1.6	65.96+ .23	32.1 3.1
29.5	25.10 +.26	59.6 −2.6	16.02 +.08	22.1 +2.8	38.30 +.12	18.2 +1.6	66.05− .05	35.3 +3.2
June 8.5	25.31 .15	62.2 2.6	16.08 +.04	24.9 2.7	38.41 .09	19.8 1.6	65.86 .32	38.5 3.1
18.4	25.41 +.05	64.8 2.5	16.09 .00	27.6 2.6	38.48 .05	21.4 1.6	65.40 .60	41.5 3.0
28.4	25.42 −.05	67.3 2.4	16.07 −.05	30.1 2.4	38.52 +.02	23.0 1.5	64.67 .85	44.3 2.7
July 8.4	25.32 .15	69.6 2.2	16.00 .09	32.4 2.1	38.52 −.02	24.4 1.4	63.70 1.08	46.9 2.4
18.4	25.13 −.24	71.7 −1.9	15.89 −.13	34.4 +1.8	38.48 −.05	25.7 +1.2	62.51−1.28	49.2 +2.0
28.3	24.85 .32	73.4 1.6	15.74 .17	36.1 1.5	38.41 .08	26.8 1.0	61.13 1.45	51.0 1.6
Aug. 7.3	24.50 .39	74.8 1.2	15.56 .20	37.4 1.1	38.31 .12	27.7 0.8	59.59 1.60	52.4 1.2
17.3	24.08 .44	75.8 0.7	15.35 .22	38.3 0.7	38.18 .14	28.3 0.6	57.93 1.71	53.4 0.7
27.2	23.61 .48	76.3 −0.3	15.12 .24	38.7 +0.2	38.03 .15	28.6 0.3	56.17 1.78	53.8 +0.2
Sept. 6.2	23.12 −.49	76.3 +0.2	14.87 −.24	38.7 −0.2	37.87 −.16	29.0 +0.1	54.37−1.81	53.8 −0.3
16.2	22.63 .48	75.9 0.7	14.63 .24	38.3 0.7	37.70 .17	29.0 −0.2	52.55 1.80	53.2 0.8
26.2	22.16 .45	75.0 1.1	14.39 .23	37.4 1.1	37.53 .16	28.7 0.4	50.77 1.75	52.2 1.3
Oct. 6.1	21.74 .39	73.6 1.5	14.17 .21	36.1 1.5	37.38 .14	28.1 0.7	49.05 1.66	50.7 1.8
16.1	21.38 .31	71.8 1.9	13.98 .17	34.3 2.0	37.25 .11	27.3 0.9	47.45 1.52	48.7 2.2
26.1	21.12 −.21	69.8 +2.2	13.83 −.13	32.1 −2.4	37.15 −.08	26.2 −1.2	46.01−1.34	46.3 −2.6
Nov. 5.1	20.96 −.10	67.4 2.4	13.72 .08	29.6 2.7	37.10 −.04	24.9 1.4	44.77 1.13	43.4 3.0
15.0	20.92 +.02	65.0 2.5	13.66 −.03	26.7 3.0	37.08 +.01	23.3 1.7	43.75 .88	40.3 3.3
25.0	21.01 .15	62.4 2.5	13.66 +.03	23.5 3.2	37.11 .06	21.5 1.9	43.01 .60	36.9 3.5
Dec. 5.0	21.23 .28	60.0 2.4	13.73 .09	20.2 3.4	37.19 .11	19.5 2.0	42.56− .30	33.4 3.6
14.9	21.57 +.40	57.7 +2.2	13.85 +.15	16.8 −3.4	37.32 +.15	17.4 −2.1	42.41+ .01	29.7 −3.6
24.9	22.02 .50	55.6 1.9	14.02 .20	13.4 3.3	37.50 .19	15.2 2.2	42.58 .32	26.1 3.5
34.9	22.58 +.60	53.8 +1.6	14.25 +.25	10.1 −3.2	37.71 +.22	13.0 −2.2	43.06+ .63	22.7 −3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*d* Herculis.		α¹ Herculis.		*b* Ophiuchi.		β Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 16 57	+33° 42′	h m 17 9	+14° 30′	h m 17 19	−24° 4′	h m 17 27	+52° 22′
	s	″	s	″	s	″	s	″
(Dec.30.9)	37.52 +.21	72.4 −3.2	44.34 +.20	35.7 −2.4	48.02 +.23	40.1 −0.3	58.65 +.18	37.7 −3.6
Jan. 9.9	37.75 .25	69.4 3.0	44.56 .23	33.3 2.3	48.27 .26	40.4 0.4	58.86 .24	34.2 3.4
19.9	38.02 .28	66.5 2.7	44.81 .26	31.0 2.1	48.55 .29	40.8 0.4	59.12 .29	31.0 3.1
29.8	38.32 .31	64.0 2.3	45.08 .28	29.0 1.9	48.86 .31	41.3 0.5	59.44 .33	28.1 2.7
Feb. 8.8	38.64 .33	62.0 1.8	45.37 .30	27.3 1.6	49.18 .33	41.8 0.5	59.80 .37	25.6 2.2
18.8	38.97 +.34	60.4 −1.3	45.67 +.30	25.9 −1.2	49.52 +.34	42.3 −0.5	60.19 +.40	23.7 −1.6
28.8	39.31 .34	59.4 0.7	45.98 .31	24.9 0.8	49.86 .34	42.8 0.5	60.60 .41	22.5 1.0
Mar. 10.7	39.64 .33	59.0 −0.1	46.29 .30	24.3 −0.4	50.20 .34	43.3 0.4	61.01 .42	21.8 −0.3
20.7	39.97 .32	59.1 +0.4	46.59 .29	24.2 +0.1	50.53 .33	43.7 0.4	61.43 .41	21.8 +0.3
30.7	40.28 .30	59.8 0.9	46.87 .28	24.5 0.5	50.86 .32	44.0 0.3	61.83 .39	22.5 0.9
Apr. 9.6	40.57 +.28	61.0 +1.4	47.15 +.26	25.2 +0.9	51.17 +.31	44.3 −0.2	62.21 +.36	23.8 +1.5
19.6	40.83 .25	62.7 1.8	47.41 .24	26.3 1.2	51.47 .29	44.5 0.2	62.56 .33	25.6 2.0
29.6	41.07 .22	64.8 2.2	47.64 .22	27.7 1.5	51.75 .27	44.7 0.2	62.87 .29	27.9 2.5
May 9.6	41.27 .19	67.1 2.4	47.85 .20	29.3 1.7	52.01 .24	44.8 0.2	63.14 .24	30.6 2.8
19.5	41.44 .15	69.7 2.6	48.03 .17	31.1 1.8	52.23 .21	44.9 0.2	63.36 .19	33.5 3.0
29.5	41.57 +.11	72.3 +2.7	48.19 +.14	33.0 +1.9	52.43 +.18	45.1 −0.2	63.52 +.14	36.7 +3.2
June 8.5	41.66 .07	75.0 2.7	48.31 .10	35.0 1.9	52.60 .14	45.2 0.2	63.63 .08	39.9 3.2
18.5	41.70 +.03	77.6 2.6	48.39 .06	36.9 1.9	52.73 .10	45.4 0.2	63.68 +.02	43.1 3.1
28.4	41.71 −.01	80.1 2.4	48.43 +.02	38.7 1.8	52.81 .06	45.6 0.2	63.66 −.04	46.1 3.0
July 8.4	41.67 .06	82.4 2.2	48.44 −.01	40.4 1.6	52.86 +.02	45.8 0.2	63.59 .10	49.0 2.8
18.4	41.59 −.10	84.5 +1.9	48.41 −.05	42.0 +1.4	52.86 −.02	46.0 −0.2	63.46 −.16	51.7 +2.5
28.3	41.48 .13	86.2 1.6	48.35 .08	43.3 1.2	52.82 .06	46.2 0.2	63.27 .21	54.0 2.1
Aug. 7.3	41.33 .16	87.6 1.2	48.25 .11	44.4 1.0	52.74 .10	46.4 0.2	63.04 .25	55.9 1.7
17.3	41.14 .19	88.7 0.8	48.12 .14	45.3 0.7	52.63 .13	46.5 0.1	62.77 .29	57.4 1.3
27.3	40.94 .21	89.3 +0.4	47.97 .16	45.9 0.4	52.49 .15	46.6 −0.1	62.46 .32	58.5 0.8
Sept. 6.2	40.72 −.22	89.6 0.0	47.80 −.17	46.2 +0.1	52.33 −.17	46.6 0.0	62.13 −.34	59.1 +0.3
16.2	40.50 .22	89.4 −0.4	47.62 .18	46.2 −0.2	52.16 .17	46.5 +0.1	61.78 .34	59.2 −0.2
26.2	40.27 .21	88.7 0.8	47.45 .17	45.9 0.4	51.99 .16	46.4 0.1	61.43 .34	58.7 0.7
Oct. 6.2	40.07 .19	87.7 1.2	47.28 .15	45.3 0.7	51.82 .15	46.2 0.2	61.10 .32	57.8 1.2
16.1	39.88 .17	86.2 1.6	47.14 .13	44.4 1.0	51.68 .12	46.0 0.2	60.78 .30	56.4 1.7
26.1	39.73 −.13	84.4 −2.0	47.02 −.10	43.2 −1.3	51.57 −.09	45.7 +0.3	60.50 −.26	54.5 −2.1
Nov. 5.1	39.62 .09	82.1 2.4	46.94 .06	41.8 1.6	51.50 −.05	45.4 0.3	60.27 .21	52.1 2.5
15.0	39.56 −.04	79.5 2.7	46.91 −.01	40.0 1.9	51.48 .00	45.2 0.2	60.09 .15	49.3 2.9
25.0	39.55 +.02	76.7 2.9	46.92 +.04	38.1 2.1	51.51 +.05	45.1 +0.1	59.98 .08	46.2 3.2
Dec. 5.0	39.60 .08	73.6 3.1	46.98 .08	35.9 2.2	51.60 .11	45.0 0.0	59.94 −.01	42.8 3.5
15.0	39.70 +.13	70.5 −3.2	47.09 +.13	33.6 −2.3	51.73 +.16	45.0 −0.1	59.96 +.06	39.3 −3.6
24.9	39.86 .18	67.3 3.2	47.24 .17	31.2 2.4	51.91 .20	45.1 0.2	60.06 .13	35.7 3.6
34.9	40.06 +.23	64.1 −3.1	47.44 +.21	28.8 −2.4	52.14 +.24	45.4 −0.3	60.23 +.20	32.1 −3.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ophiuchi.		ω Draconis.		μ Herculis.		ψ¹ Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 17 29	° ′ +12 37	h m 17 37	° ′ +68 47	h m 17 42	° ′ +27 46	h m 17 43	° ′ +72 11
(Dec.30.9)	s 56.23 +.18	″ 68.1 −2.3	s 31.29 +.17	″ 74.2 −3.7	s 14.38 +.16	″ 49.7 −3.0	s 46.41 +.16	″ 52.3 −3.7
Jan. 9.9	56.43 .22	65.8 2.2	31.52 .28	70.6 3.5	14.56 .20	46.8 2.8	46.64 .29	48.7 3.5
19.9	56.66 .25	63.6 2.1	31.85 .38	67.2 3.2	14.78 .24	44.0 2.6	46.99 .41	45.3 3.2
29.9	56.92 .27	61.6 1.9	32.28 .47	64.2 2.8	15.03 .27	41.5 2.3	47.46 .52	42.3 2.8
Feb. 8.8	57.20 .29	59.9 1.6	32.79 .54	61.7 2.3	15.31 .29	39.4 1.9	48.03 .61	39.7 2.3
18.8	57.50 +.30	58.5 −1.2	33.37 +.59	59.7 −1.7	15.61 +.30	37.7 −1.5	48.68 +.68	37.6 −1.7
28.8	57.80 .30	57.5 0.8	33.98 .63	58.4 1.0	15.92 .31	36.4 1.0	49.39 .72	36.2 1.1
Mar. 10.7	58.10 .30	56.9 −0.4	34.63 .64	57.7 −0.4	16.24 .32	35.7 −0.5	50.13 .74	35.4 −0.4
20.7	58.40 .30	56.8 0.0	35.27 .64	57.6 +0.3	16.56 .31	35.5 +0.1	50.88 .74	35.3 +0.3
30.7	58.70 .29	57.0 +0.4	35.90 .61	58.3 1.0	16.87 .30	35.8 0.6	51.61 .71	35.8 0.9
Apr. 9.7	58.98 +.28	57.7 +0.8	36.49 +.57	59.6 +1.6	17.17 +.29	36.7 +1.1	52.30 +.66	37.0 +1.5
19.6	59.25 .26	58.7 1.1	37.03 .51	61.4 2.1	17.45 .27	38.0 1.5	52.94 .59	38.8 2.0
29.6	59.50 .24	60.0 1.4	37.50 .43	63.7 2.5	17.72 .25	39.7 1.9	53.49 .51	41.1 2.4
May 9.6	59.72 .21	61.5 1.6	37.90 .35	66.5 2.9	17.96 .22	41.8 2.2	53.95 .41	43.8 2.8
19.6	59.93 .19	63.3 1.8	38.20 .25	69.5 3.1	18.17 .19	44.1 2.4	54.31 .30	46.8 3.1
29.5	60.10 +.16	65.1 +1.9	38.41 +.15	72.8 +3.3	18.34 +.16	46.6 +2.5	54.55 +.18	50.0 +3.2
June 8.5	60.24 .12	67.0 1.9	38.52 +.05	76.1 3.3	18.48 .12	49.1 2.5	54.67 +.06	53.3 3.3
18.5	60.34 .08	68.9 1.8	38.52 −.05	79.4 3.3	18.58 .08	51.7 2.5	54.66 −.06	56.6 3.3
28.4	60.41 .04	70.8 1.7	38.42 .15	82.7 3.2	18.64 +.04	54.2 2.4	54.54 .18	59.8 3.2
July 8.4	60.44 +.01	72.5 1.6	38.22 .25	85.7 2.9	18.66 .00	56.6 2.3	54.30 .30	62.9 3.0
18.4	60.42 −.03	74.0 +1.4	37.93 −.34	88.5 +2.6	18.63 −.05	58.7 +2.1	53.94 −.41	65.7 +2.7
28.4	60.37 .07	75.4 1.2	37.55 .42	91.0 2.3	18.56 .09	60.7 1.8	53.48 .51	68.2 2.3
Aug. 7.3	60.29 .10	76.5 1.0	37.09 .49	93.1 1.9	18.45 .13	62.3 1.5	52.93 .59	70.3 1.9
17.3	60.17 .13	77.4 0.8	36.56 .55	94.7 1.4	18.31 .16	63.6 1.2	52.30 .66	72.1 1.5
27.3	60.03 .15	78.1 0.5	35.98 .60	95.9 0.9	18.14 .18	64.6 0.8	51.61 .72	73.3 1.0
Sept. 6.3	59.86 −.17	78.5 +0.2	35.37 −.63	96.6 +0.4	17.94 −.20	65.2 +0.4	50.86 −.76	74.1 +0.5
16.2	59.69 .17	78.6 −0.1	34.72 .64	96.8 −0.1	17.74 .21	65.4 0.0	50.09 .78	74.4 0.0
26.2	59.52 .17	78.4 0.3	34.08 .64	96.5 0.5	17.53 .21	65.3 −0.4	49.31 .77	74.1 −0.5
Oct. 6.2	59.35 .16	78.0 0.6	33.44 .62	95.7 1.1	17.32 .20	64.7 0.8	48.54 .75	73.3 1.0
16.1	59.20 .14	77.3 0.9	32.84 .58	94.3 1.6	17.13 .18	63.7 1.2	47.80 .71	72.0 1.5
26.1	59.07 −.11	76.2 −1.2	32.29 −.52	92.4 −2.1	16.97 −.15	62.4 −1.6	47.12 −.64	70.2 −2.0
Nov. 5.1	58.98 .07	74.9 1.4	31.80 .44	90.0 2.6	16.84 .11	60.6 1.9	46.52 .56	68.0 2.5
15.1	58.93 −.03	73.4 1.7	31.40 .35	87.3 3.0	16.75 .07	58.5 2.2	46.00 .46	65.2 2.9
25.0	58.92 +.02	71.6 1.9	31.09 .25	84.1 3.3	16.71 −.02	56.1 2.5	45.60 .34	62.2 3.2
Dec. 5.0	58.97 .07	69.6 2.1	30.89 .14	80.7 3.5	16.71 +.03	53.5 2.7	45.32 .21	58.8 3.5
15.0	59.06 +.11	67.4 −2.2	30.81 −.09	77.1 −3.6	16.77 +.06	50.7 −2.9	45.18 −.07	55.2 −3.6
25.0	59.19 .16	65.1 2.3	30.85 +.10	73.4 3.7	16.88 .13	47.8 2.9	45.18 +.07	51.5 3.7
34.9	59.37 +.20	62.8 −2.3	31.00 +.21	69.8 −3.6	17.04 +.18	44.9 −2.9	45.31 +.21	47.9 −3.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Draconis.		γ² Sagittarii.		μ Sagittarii.		η Serpentis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 17 54	° ′ +51 29	h m 17 58	° ′ −30 25	h m 18 7	° ′ −21 5	h m 18 15	° ′ − 2 55
	s	″	s	″	s	″	s	″
Jan. 0.0	4.91 +.13	54.4 −3.6	53.79 +.20	36.6 +0.3	19.77 +.18	18.6 −0.3	44.46 +.15	42.2 −1.3
9.9	5.08 .19	50.9 3.4	54.01 .24	36.3 0.2	19.97 .22	18.9 0.3	44.63 .18	43.5 1.3
19.9	5.30 .25	47.5 3.2	54.28 .27	36.1 0.1	20.21 .25	19.2 0.3	44.84 .21	44.8 1.3
29.9	5.58 .30	44.5 2.8	54.57 .30	36.0 +0.1	20.47 .27	19.5 0.3	45.07 .24	46.1 1.2
Feb. 8.9	5.91 .34	41.9 2.4	54.89 .32	36.0 0.0	20.76 .29	19.8 0.3	45.32 .26	47.2 1.0
18.8	6.27 +.37	39.8 −1.8	55.22 +.34	36.0 0.0	21.06 +.31	20.0 −0.2	45.60 +.28	48.1 −0.8
28.8	6.66 .39	38.2 1.2	55.57 .35	36.0 0.0	21.38 .32	20.2 0.2	45.88 .29	48.7 0.5
Mar. 10.8	7.06 .40	37.3 −0.6	55.92 .35	36.0 0.0	21.71 .32	20.3 −0.1	46.18 .30	49.1 −0.3
20.8	7.47 .40	37.1 +0.1	56.28 .35	36.1 −0.1	22.04 .33	20.3 0.0	46.48 .30	49.3 0.0
30.7	7.87 .40	37.5 0.7	56.63 .35	36.2 0.1	22.36 .32	20.3 +0.1	46.78 .30	49.1 +0.3
Apr. 9.7	8.26 +.38	38.5 +1.3	56.98 +.34	36.2 −0.1	22.69 +.32	20.1 +0.2	47.08 +.29	48.7 +0.5
19.7	8.63 .35	40.2 1.8	57.31 .33	36.3 0.1	23.00 .31	19.9 0.2	47.37 .28	48.0 0.7
29.6	8.96 .31	42.3 2.3	57.63 .31	36.5 0.1	23.30 .29	19.6 0.3	47.65 .27	47.2 0.9
May 9.6	9.26 .27	44.8 2.7	57.94 .29	36.6 0.2	23.59 .27	19.3 0.3	47.91 .25	46.1 1.1
19.6	9.51 .22	47.6 3.0	58.21 .26	36.8 0.2	23.85 .25	19.0 0.3	48.16 .23	45.0 1.2
29.6	9.71 +.17	50.7 +3.1	58.46 +.23	37.1 −0.3	24.09 +.22	18.8 +0.3	48.38 +.21	43.8 +1.2
June 8.5	9.85 .11	53.9 3.2	58.67 .19	37.5 0.4	24.30 .19	18.5 0.2	48.57 .18	42.5 1.2
18.5	9.94 +.05	57.2 3.2	58.85 .15	37.9 0.4	24.47 .15	18.4 0.1	48.73 .14	41.3 1.2
28.5	9.96 .00	60.4 3.1	58.98 .11	38.4 0.5	24.60 .11	18.3 +0.1	48.85 .10	40.1 1.1
July 8.4	9.93 −.06	63.4 2.9	59.07 .06	38.9 0.5	24.69 .07	18.2 0.0	48.93 .06	39.0 1.0
18.4	9.84 −.12	66.3 +2.7	59.11 +.01	39.4 −0.5	24.73 +.02	18.2 0.0	48.97 +.02	38.1 +0.9
28.4	9.69 .18	68.8 2.4	59.10 −.03	40.0 0.5	24.73 −.02	18.3 −0.1	48.97 −.02	37.2 0.8
Aug. 7.4	9.49 .23	71.0 2.0	59.04 .07	40.5 0.5	24.69 .06	18.4 0.1	48.93 .06	36.5 0.6
17.3	9.24 .27	72.8 1.6	58.95 .11	41.0 0.4	24.61 .10	18.6 0.1	48.85 .09	36.0 0.5
27.3	8.95 .30	74.2 1.1	58.82 .14	41.3 0.3	24.49 .13	18.7 0.1	48.74 .12	35.6 0.3
Sept. 6.3	8.64 −.33	75.2 +0.7	58.66 −.17	41.6 −0.2	24.35 −.15	18.8 −0.1	48.60 −.14	35.3 +0.2
16.3	8.30 .34	75.6 +0.2	58.48 .18	41.8 −0.1	24.18 .17	18.9 −0.1	48.45 .16	35.2 +0.1
26.2	7.96 .34	75.5 −0.3	58.29 .18	41.9 0.0	24.01 .17	19.0 0.0	48.28 .16	35.2 −0.1
Oct. 6.2	7.62 .33	75.0 0.8	58.11 .17	41.8 +0.2	23.84 .16	19.0 0.0	48.12 .16	35.3 0.2
16.2	7.30 .31	73.9 1.3	57.94 .15	41.5 0.3	23.69 .14	19.0 0.0	47.96 .14	35.6 0.4
26.1	7.01 −.27	72.3 −1.8	57.80 −.12	41.2 +0.4	23.55 −.12	18.9 0.0	47.83 −.12	36.1 −0.5
Nov. 5.1	6.75 .22	70.2 2.3	57.70 .08	40.8 0.5	23.45 .08	18.9 0.0	47.72 .09	36.7 0.7
15.1	6.55 .17	67.7 2.7	57.64 −.03	40.3 0.5	23.39 −.04	18.8 0.0	47.65 .05	37.5 0.8
25.1	6.41 .11	64.9 3.0	57.63 +.02	39.8 0.5	23.38 +.01	18.8 0.0	47.62 −.01	38.4 1.0
Dec. 5.0	6.33 −.05	61.7 3.3	57.68 .07	39.3 0.5	23.41 .06	18.6 0.0	47.64 +.04	39.4 1.1
15.0	6.32 +.02	58.3 −3.5	57.77 +.12	38.8 +0.4	23.49 +.11	18.9 −0.1	47.70 +.08	40.6 −1.2
25.0	6.38 .09	54.7 3.5	57.92 .17	38.4 0.4	23.62 .15	19.0 0.2	47.80 .12	41.8 1.3
35.0	6.50 +.16	51.2 −3.6	58.12 +.22	38.1 +0.3	23.80 +.20	19.2 −0.3	47.95 +.16	43.1 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	1 Aquilæ.		α Lyræ. (*Vega*.)		σ Octantis.		β Lyræ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	$18^h\ 29^m$	$-\ 8^\circ\ 19'$	$18^h\ 33^m$	$+38^\circ\ 40'$	18^h	$-89^\circ\ 15'$	$18^h\ 46^m$	$+33^\circ\ 13'$
	s	″	s	″	m s s	″	s	″
Jan. 0.0	21.11 +.15	16.0 −1.0	16.80 +.10	53.9 −3.2	45 42.3+ 4.2	57.9 +3.4	5.69 +.06	70.0 −3.0
10.0	21.27 .18	16.9 1.0	16.92 .14	50.7 3.1	45 48.2 7.4	54.6 3.3	5.80 .13	67.0 2.9
19.9	21.47 .21	17.8 0.9	17.09 .19	47.7 3.0	45 57.1 10.3	51.4 3.1	5.96 .17	64.1 2.8
29.9	21.70 .24	18.7 0.8	17.30 .23	44.8 2.7	46 8.8 12.9	48.4 2.8	6.15 .21	61.4 2.6
Feb. 8.9	21.95 .26	19.5 0.7	17.55 .27	42.2 2.4	46 23.0 15.2	45.8 2.5	6.38 .24	58.9 2.3
18.8	22.22 +.28	20.1 −0.5	17.83 +.30	40.0 −1.9	46 39.3+17.1	43.5 +2.1	6.64 +.27	56.8 −1.9
28.8	22.51 .29	20.6 0.3	18.14 .32	38.4 1.4	46 57.2 18.5	41.6 1.7	6.93 .29	55.2 1.4
Mar. 10.8	22.81 .30	20.8 −0.1	18.47 .33	37.3 0.8	47 16.3 19.5	40.1 1.2	7.23 .31	54.1 0.9
20.8	23.11 .30	20.8 +0.1	18.80 .34	36.7 −0.2	47 36.2 20.1	39.2 0.7	7.55 .32	53.5 −0.3
30.7	23.42 .30	20.6 0.3	19.15 .34	36.8 +0.4	47 56.5 20.2	38.7 +0.2	7.68 .33	53.5 +0.3
Apr. 9.7	23.72 +.30	20.2 +0.5	19.49 +.33	37.5 +1.0	48 16.8+20.0	38.7 −0.3	8.21 +.32	54.1 +0.8
19.7	24.02 .30	19.6 0.7	19.82 .32	38.7 1.5	48 36.5 19.4	39.2 0.7	8.53 .31	55.2 1.3
29.7	24.32 .29	18.8 0.8	20.14 .30	40.4 1.9	48 55.5 18.3	40.2 1.2	8.84 .30	56.8 1.8
May 9.6	24.60 .27	18.0 0.9	20.43 .28	42.6 2.3	49 13.2 16.9	41.6 1.6	9.13 .28	58.8 2.2
19.6	24.86 .25	17.0 1.0	20.70 .25	45.1 2.6	49 29.3 15.1	43.4 2.0	9.40 .25	61.2 2.5
29.6	25.09 +.22	15.9 +1.0	20.93 +.21	47.9 +2.8	49 43.4+13.0	45.6 −2.3	9.64 +.22	63.8 +2.7
June 8.5	25.30 .19	14.9 1.0	21.12 .17	50.8 3.0	49 55.3 10.7	48.1 2.6	9.84 .18	66.6 2.8
18.5	25.48 .16	13.9 0.9	21.27 .12	53.9 3.0	50 4.7 8.0	50.9 2.8	10.01 .14	69.5 2.9
28.5	25.62 .12	13.0 0.8	21.37 .07	56.9 3.0	50 11.4 5.2	53.8 3.0	10.13 .10	72.4 2.9
July 8.5	25.72 .08	12.2 0.7	21.42 +.02	59.9 2.9	50 15.1+ 2.2	56.8 3.0	10.20 +.05	75.3 2.8
18.4	25.77 +.03	11.5 +0.6	21.42 −.02	62.7 +2.7	50 15.9− 0.8	59.9 −3.0	10.22 .00	78.0 +2.6
28.4	25.79 −.01	10.9 0.5	21.37 .07	65.3 2.5	50 13.6 3.7	62.9 2.9	10.20 −.05	80.5 2.4
Aug. 7.4	25.76 .05	10.4 0.4	21.27 .12	67.7 2.2	50 8.4 6.6	65.7 2.7	10.13 .09	82.8 2.1
17.4	25.69 .09	10.0 0.3	21.13 .16	69.7 1.9	50 0.4 9.2	68.3 2.4	10.02 .13	84.8 1.8
27.3	25.59 .12	9.7 0.2	20.95 .19	71.4 1.5	49 49.9 11.6	70.5 2.0	9.86 .17	86.4 1.5
Sept. 6.3	25.46 −.14	9.6 +0.1	20.74 −.22	72.6 +1.1	49 37.3−13.5	72.3 −1.5	9.68 −.20	87.7 +1.1
16.3	25.31 .15	9.5 0.0	20.50 .24	73.5 0.6	49 23.0 14.9	73.5 1.0	9.47 .22	88.6 0.7
26.2	25.15 .16	9.6 −0.1	20.25 .25	73.9 +0.2	49 7.6 15.7	74.3 −0.4	9.25 .22	89.1 +0.3
Oct. 6.2	24.99 .16	9.7 0.2	20.00 .25	73.8 −0.3	48 51.6 15.9	74.4 +0.2	9.02 .22	89.1 −0.2
16.2	24.83 .15	9.9 0.3	19.75 .24	73.3 0.8	48 35.8 15.4	73.9 0.8	8.80 .22	88.7 0.6
26.2	24.69 −.12	10.2 −0.4	19.52 −.22	72.3 −1.2	48 20.8−14.3	72.8 +1.4	8.59 −.20	87.9 −1.0
Nov. 5.1	24.58 .09	10.6 0.5	19.32 .18	70.8 1.7	48 7.2 12.6	71.2 1.9	8.40 .17	86.6 1.4
15.1	24.51 .05	11.1 0.6	19.16 .14	68.9 2.1	47 55.6 10.3	69.0 2.4	8.25 .13	84.9 1.8
25.1	24.47 −.01	11.7 0.7	19.03 .10	66.7 2.4	47 46.6 7.6	66.4 2.8	8.14 .09	82.9 2.2
Dec. 5.1	24.48 +.03	12.5 0.8	18.96 −.05	64.0 2.7	47 40.4 4.6	63.4 3.1	8.07 −.04	80.5 2.5
15.0	24.53 +.07	13.3 −0.8	18.94 +.01	61.2 −2.9	47 37.5− 1.3	60.2 +3.3	8.05 .00	77.9 −2.7
25.0	24.63 .12	14.1 0.9	18.96 .06	58.1 3.1	47 37.8+ 2.0	56.8 3.4	8.08 +.05	75.0 2.9
35.0	24.77 +.16	15.1 −1.0	19.07 +.11	54.9 −3.2	47 41.5+ 5.4	53.4 +3.4	8.16 +.10	72.1 −3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Sagittarii.		50 Draconis.		ζ Aquilæ.		*d* Sagittarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 18 48	° ′ −26 25	h m 18 49	° ′ +75 17	h m 19 0	° ′ +13 41	h m 19 11	° ′ −19 8
	s	″	s	″	s	″	s	″
Jan. 0.0	35.70 +.14	54.6 +0.3	43.93 −.09	80.2 −3.6	27.62 +.09	68.0 −2.1	20.46 +.11	44.8 −0.1
10.0	35.86 .18	54.4 0.2	43.92 +.07	76.7 3.5	27.73 .13	65.9 2.1	20.59 .15	44.9 0.1
20.0	36.06 .22	54.1 0.2	44.08 .24	73.1 3.4	27.88 .17	63.8 2.0	20.76 .19	45.0 −0.1
29.9	36.30 .25	53.9 0.2	44.39 .39	69.8 3.2	28.06 .20	61.9 1.8	20.96 .22	45.0 0.0
Feb. 8.9	36.57 .28	53.7 0.2	44.86 .53	66.7 2.9	28.27 .23	60.2 1.6	21.19 .24	45.0 0.0
18.9	36.86 +.30	53.4 +0.3	45.45 +.65	64.1 −2.4	28.51 +.25	58.7 −1.3	21.44 +.26	45.0 +0.1
28.8	37.17 .32	53.1 0.3	46.16 .75	61.9 1.9	28.77 .27	57.6 0.9	21.72 .28	44.8 0.2
Mar. 10.8	37.49 .33	52.8 0.3	46.95 .83	60.3 1.3	29.05 .28	56.9 0.5	22.02 .30	44.5 0.3
20.8	37.82 .34	52.4 0.4	47.80 .86	59.4 −0.6	29.34 .29	56.6 −0.1	22.34 .31	44.1 0.4
30.8	38.16 .34	52.0 0.4	48.68 .87	59.1 0.0	29.63 .30	56.8 +0.3	22.64 .32	43.6 0.5
Apr. 9.7	38.50 +.34	51.6 +0.4	49.55 +.85	59.5 +0.7	29.93 +.30	57.2 +0.7	22.97 +.32	43.0 +0.6
19.7	38.84 .34	51.2 0.4	50.39 .81	60.5 1.3	30.24 .29	58.1 1.1	23.29 .32	42.3 0.7
29.7	39.18 .33	50.7 0.4	51.17 .74	62.1 1.8	30.53 .29	59.4 1.4	23.62 .32	41.6 0.7
May 9.7	39.50 .31	50.4 0.4	51.87 .65	64.2 2.3	30.81 .28	61.0 1.7	23.93 .31	40.8 0.8
19.6	39.80 .29	50.0 0.3	52.47 .54	66.8 2.7	31.08 .26	62.9 1.9	24.23 .29	40.0 0.8
29.6	40.09 +.27	49.8 +0.2	52.95 +.41	69.7 +3.0	31.33 +.23	64.9 +2.1	24.52 +.27	39.3 +0.7
June 8.6	40.34 .24	49.6 +0.1	53.30 .27	72.9 3.2	31.54 .20	67.0 2.2	24.77 .24	38.6 0.6
18.5	40.56 .20	49.5 0.0	53.50 +.13	76.3 3.4	31.73 .17	69.2 2.2	25.00 .21	38.0 0.5
28.5	40.73 .15	49.6 −0.1	53.56 −.02	79.7 3.4	31.88 .13	71.4 2.1	25.19 .17	37.5 0.4
July 8.5	40.87 .11	49.8 0.2	53.47 .16	83.1 3.3	31.99 .09	73.5 2.0	25.34 .13	37.2 0.3
18.5	40.95 +.06	50.0 −0.3	53.23 −.31	86.4 +3.2	32.05 +.04	75.5 +1.9	25.44 +.08	37.0 +0.2
28.4	40.99 +.01	50.4 0.4	52.85 .44	89.5 3.0	32.07 .00	77.3 1.7	25.50 +.03	36.9 +0.1
Aug. 7.4	40.98 −.03	50.8 0.4	52.34 .57	92.4 2.7	32.05 −.04	78.9 1.5	25.51 −.01	36.9 0.0
17.4	40.93 .07	51.2 0.4	51.71 .68	95.0 2.4	31.99 .08	80.3 1.3	25.47 .05	37.0 −0.1
27.4	40.84 .11	51.6 0.4	50.98 .78	97.2 2.0	31.89 .11	81.4 1.0	25.40 .09	37.1 0.2
Sept. 6.3	40.71 −.14	52.0 −0.4	50.16 −.86	99.0 +1.6	31.76 −.14	82.4 +0.7	25.29 −.13	37.3 −0.2
16.3	40.55 .16	52.4 0.3	49.27 .91	100.3 1.1	31.60 .16	83.0 0.5	25.15 .15	37.6 0.2
26.3	40.38 .17	52.6 0.2	48.34 .94	101.1 0.6	31.43 .17	83.3 +0.2	25.00 .16	37.8 0.2
Oct. 6.2	40.20 .17	52.8 −0.1	47.38 .95	101.5 +0.1	31.26 .18	83.3 −0.1	24.83 .17	38.1 0.2
16.2	40.03 .16	52.9 0.0	46.43 .94	101.3 −0.5	31.08 .17	83.0 0.4	24.66 .16	38.3 0.2
26.2	39.87 −.14	52.9 +0.1	45.50 −.90	100.5 −1.0	30.92 −.15	82.5 −0.7	24.51 −.14	38.5 −0.2
Nov. 5.2	39.74 .11	52.8 0.2	44.63 .84	99.2 1.5	30.78 .13	81.6 1.0	24.38 .12	38.6 0.1
15.1	39.65 .07	52.6 0.2	43.83 .75	97.4 2.0	30.67 .10	80.5 1.3	24.28 .09	38.7 0.1
25.1	39.60 −.03	52.3 0.3	43.13 .64	95.1 2.5	30.59 .06	79.1 1.5	24.21 −.04	38.8 0.1
Dec. 5.1	39.59 +.02	52.0 0.3	42.56 .50	92.4 2.9	30.55 −.02	77.5 1.7	24.19 .00	38.9 0.1
15.1	39.64 +.07	51.7 +0.3	42.13 −.35	89.3 −3.2	30.55 +.02	75.6 −1.9	24.21 +.04	39.0 −0.1
25.0	39.73 .12	51.4 0.3	41.85 .20	86.0 3.4	30.60 .06	73.7 2.0	24.27 .08	39.1 0.1
35.0	39.87 +.16	51.2 +0.3	41.73 −.03	82.5 −3.6	30.69 +.11	71.6 −2.1	24.38 +.13	39.2 −0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Draconis.		τ Draconis.		δ Aquilæ.		κ Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 19 12	+67° 27′	h m 19 17	+73° 8′	h m 19 20	+ 2° 53′	h m 19 31	− 7° 15′
	s	″	s	″	s	″	s	″
Jan. 0.0	27.96 −.07	78.3 −3.5	31.72 −.16	79.2 −3.5	4.31 +.06	57.0 −1.4	6.20 +.06	63.9 −0.8
10.0	27.94 +.04	74.8 3.5	31.64 −.02	75.7 3.5	4.42 .12	55.5 1.4	6.30 .12	64.7 0.8
20.0	28.03 .14	71.2 3.5	31.69 +.13	72.2 3.5	4.56 .15	54.1 1.3	6.43 .15	65.5 0.7
29.9	28.23 .24	67.8 3.3	31.90 .27	68.7 3.3	4.73 .18	52.8 1.2	6.60 .18	66.2 0.6
Feb. 8.9	28.52 .34	64.6 3.0	32.23 .40	65.5 3.0	4.93 .21	51.7 1.1	6.80 .21	66.8 0.5
18.9	28.90 +.42	61.8 −2.6	32.69 +.51	62.7 −2.6	5.16 +.24	50.7 −0.9	7.03 +.24	67.2 −0.3
28.9	29.37 .49	59.5 2.1	33.26 .61	60.3 2.1	5.40 .26	50.0 0.6	7.27 .26	67.4 −0.1
Mar. 10.8	29.89 .54	57.7 1.5	33.92 .69	58.4 1.6	5.67 .27	49.6 −0.2	7.54 .28	67.4 +0.1
20.8	30.46 .58	56.5 0.8	34.64 .74	57.1 1.0	5.95 .28	49.5 +0.1	7.82 .29	67.2 0.3
30.8	31.05 .60	56.0 −0.1	35.40 .77	56.5 −0.3	6.24 .29	49.9 0.4	8.12 .30	66.8 0.5
Apr. 9.8	31.66 +.60	56.2 +0.5	36.17 +.77	56.6 +0.4	6.54 +.30	50.3 +0.7	8.42 +.31	66.1 +0.8
19.7	32.26 .58	57.0 1.1	36.94 .75	57.3 1.0	6.84 .30	51.2 1.0	8.73 .31	65.3 1.0
29.7	32.83 .55	58.4 1.7	37.67 .70	58.6 1.6	7.14 .30	52.4 1.3	9.04 .31	64.2 1.1
May 9.7	33.36 .51	60.3 2.2	38.34 .64	60.4 2.1	7.44 .29	53.8 1.5	9.35 .30	63.0 1.2
19.6	33.84 .44	62.8 2.6	38.94 .55	62.8 2.6	7.72 .27	55.3 1.6	9.64 .29	61.7 1.3
29.6	34.24 +.36	65.6 +3.0	39.45 +.45	65.5 +2.9	7.98 +.25	57.0 +1.7	9.92 +.27	60.4 +1.3
June 8.6	34.56 .28	68.8 3.3	39.85 .34	68.6 3.2	8.22 .22	58.7 1.7	10.17 .24	59.1 1.3
18.6	34.80 .19	72.1 3.4	40.13 .22	71.9 3.4	8.43 .19	60.5 1.7	10.40 .21	57.8 1.2
28.5	34.93 +.09	75.6 3.4	40.28 +.09	75.4 3.5	8.61 .16	62.2 1.6	10.59 .17	56.6 1.1
July 8.5	34.97 −.01	79.1 3.5	40.30 −.04	78.9 3.5	8.74 .12	63.8 1.5	10.75 .13	55.5 1.0
18.5	34.91 −.11	82.6 +3.4	40.20 −.17	82.4 +3.4	8.84 +.07	65.3 +1.4	10.86 +.09	54.5 +0.9
28.5	34.76 .20	85.9 3.2	39.96 .29	85.7 3.2	8.89 +.03	66.7 1.3	10.93 +.05	53.7 0.8
Aug. 7.4	34.50 .29	89.0 2.9	39.61 .41	88.9 3.0	8.89 −.01	67.8 1.1	10.95 .00	53.0 0.6
17.4	34.17 .38	91.8 2.6	39.14 .52	91.7 2.7	8.86 .05	68.8 0.9	10.93 −.04	52.5 0.4
27.4	33.75 .45	94.2 2.3	38.58 .61	94.3 2.4	8.79 .09	69.7 0.7	10.87 .08	52.1 0.3
Sept. 6.3	33.27 −.51	96.3 +1.9	37.92 −.69	96.5 +2.0	8.68 −.12	70.3 +0.5	10.77 −.11	51.9 +0.2
16.3	32.73 .55	98.0 1.4	37.19 .75	98.2 1.5	8.55 .14	70.7 0.3	10.65 .13	51.8 0.0
26.3	32.16 .58	99.1 0.9	36.42 .79	99.4 1.0	8.39 .16	70.9 +0.1	10.51 .15	51.8 −0.1
Oct. 6.3	31.56 .60	99.7 +0.4	35.60 .82	100.2 +0.5	8.23 .16	70.9 −0.1	10.35 .16	51.9 0.2
16.2	30.96 .60	99.9 −0.2	34.78 .82	100.4 0.0	8.07 .15	70.7 0.3	10.19 .15	52.2 0.3
26.2	30.37 −.58	99.4 −0.7	33.97 −.80	100.1 −0.6	7.92 −.14	70.3 −0.5	10.04 −.14	52.5 −0.4
Nov. 5.2	29.81 .54	98.4 1.3	33.19 .75	99.3 1.1	7.79 .12	69.7 0.7	9.91 .12	52.9 0.4
15.2	29.30 .46	96.9 1.8	32.47 .68	97.9 1.6	7.68 .09	68.9 0.9	9.80 .09	53.4 0.5
25.1	28.84 .41	94.8 2.3	31.82 .60	95.9 2.2	7.60 .05	68.0 1.0	9.72 .06	53.9 0.6
Dec. 5.1	28.47 .33	92.3 2.7	31.27 .49	93.5 2.6	7.56 −.02	66.9 1.2	9.68 −.02	54.6 0.7
15.1	28.18 −.24	89.4 −3.0	30.83 −.37	90.7 −3.0	7.56 +.02	65.6 −1.3	9.68 +.02	55.3 −0.7
25.0	27.99 .14	86.2 3.3	30.52 .24	87.5 3.3	7.60 .06	64.3 1.4	9.72 .06	56.1 0.8
35.0	27.91 −.03	82.8 −3.5	30.35 −.11	84.2 −3.5	7.68 +.10	62.9 −1.4	9.79 +.10	56.8 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		α Aquilæ. (*Altair.*)		ε Draconis.		β Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 19 41	° ′ +10 20	h m 19 45	° ′ + 8 34	h m 19 48	° ′ +69 59	h m 19 50	° ′ + 6 8
	s	″	s	″	s	″	s	″
Jan. 0.0	8.49 +.06	61.4 −1.8	31.90 +.05	60.7 −1.6	27.57 −.19	40.8 −3.3	1.59 +.05	14.0 −1.5
10.0	8.56 .09	59.6 1.8	31.97 .09	59.1 1.6	27.43 −.07	37.5 3.4	1.66 .09	12.5 1.5
20.0	8.67 .13	57.8 1.7	32.08 .13	57.4 1.6	27.42 +.05	34.0 3.4	1.77 .12	11.0 1.5
30.0	8.82 .16	56.2 1.6	32.23 .16	55.9 1.5	27.52 .16	30.5 3.4	1.90 .15	9.6 1.4
Feb. 8.9	9.00 .19	54.7 1.4	32.40 .19	54.5 1.3	27.74 .27	27.2 3.2	2.07 .18	8.3 1.2
18.9	9.20 +.22	53.4 −1.1	32.61 +.22	53.3 −1.0	28.07 +.38	24.2 −2.8	2.27 +.21	7.2 −0.9
28.9	9.43 .24	52.4 0.8	32.83 .24	52.4 0.7	28.51 .47	21.6 2.4	2.50 .23	6.4 0.6
Mar. 10.9	9.68 .26	51.7 0.4	33.08 .26	51.8 −0.4	29.02 .55	19.4 1.9	2.75 .25	5.9 −0.3
20.8	9.95 .28	51.5 −0.1	33.35 .28	51.6 0.0	29.60 .61	17.8 1.3	3.01 .27	5.7 0.0
30.8	10.24 .29	51.6 +0.3	33.64 .29	51.8 +0.3	30.24 .65	16.9 −0.6	3.29 .29	5.9 +0.4
Apr. 9.8	10.54 +.30	52.1 +0.7	33.94 +.30	52.3 +0.7	30.90 +.67	16.6 0.0	3.59 +.30	6.4 +0.7
19.7	10.84 .30	53.0 1.0	34.24 .30	53.2 1.1	31.57 .66	16.9 +0.7	3.89 .30	7.3 1.0
29.7	11.14 .30	54.2 1.4	34.54 .30	54.4 1.4	32.23 .64	17.9 1.3	4.20 .30	8.5 1.3
May 9.7	11.44 .29	55.7 1.6	34.84 .30	55.9 1.6	32.85 .60	19.4 1.8	4.50 .29	10.0 1.5
19.7	11.73 .28	57.5 1.8	35.14 .29	57.7 1.8	33.43 .54	21.5 2.3	4.79 .28	11.6 1.7
29.6	12.00 +.26	59.4 +2.0	35.41 +.27	59.6 +2.0	33.94 +.47	24.1 +2.7	5.07 +.27	13.4 +1.9
June 8.6	12.25 .23	61.5 2.1	35 67 .24	61.6 2.1	34.37 .38	27.0 3.1	5.33 .24	15.4 1.9
18.6	12.47 .20	63.6 2.1	35.89 .21	63.7 2.1	34.70 .28	30.2 3.3	5.56 .21	17.3 1.9
22.6	12.66 .17	65.7 2.1	36.09 .17	65.7 2.0	34.94 .19	33.7 3.5	5.75 .18	19.2 1.9
July 8.5	12.81 .13	67.8 2.0	36.24 .13	67.7 1.9	35.07 +.07	37.2 3.5	5.91 .14	21.1 1.8
18.5	12.92 +.09	69.7 +1.9	36 36 +.09	69.6 +1.8	35.08 −.04	40.8 +3.5	6.03 +.10	22.9 +1.7
28.5	12.98 +.04	71.6 1.7	36.42 +.05	71.4 1.7	34.99 .15	44.3 3.4	6.11 .05	24.5 1.5
Aug. 7.4	13.00 .00	73.2 1.5	36.45 .00	72.9 1.5	34.79 .26	47.7 3.2	6.14 +.01	25.9 1.3
17.4	12.97 −.04	74.6 1.3	36.43 −.04	74.3 1.3	34.49 .35	50.8 3.0	6.12 −.03	27.1 1.1
27.4	12.91 .08	75.8 1.1	36.37 .08	75.4 1.0	34.09 .44	53.7 2.7	6.07 .07	28.2 0.9
Sept. 6.4	12.81 −.11	76.8 +0.8	36.28 −.11	76.3 +0.8	33.61 −.51	56.3 +2.3	5.98 −.10	29.0 +0.7
16.3	12.68 .14	77.4 0.5	36.15 .13	77.0 0.6	33.06 .58	58.4 1.9	5.86 .13	29.6 0.5
26.3	12.53 .16	77.9 0.3	36.01 .15	77.5 0.3	32.45 .63	60.1 1.5	5.72 .15	29.9 +0.2
Oct. 6.3	12.36 .16	78.1 +0.1	35.85 .16	77.6 +0.1	31.80 .66	61.3 1.0	5.56 .16	30.0 0.0
16.3	12.20 .16	78.0 −0.2	35.69 .16	77.6 −0.2	31.14 .67	62.0 +0.4	5.40 .16	29.9 −0.1
26.2	12.04 −.15	77.7 −0.5	35.53 −.15	77.3 −0.4	30.47 −.66	62.2 −0.1	5.25 −.15	29.6 −0.4
Nov. 5.2	11.89 .13	77.1 0.7	35.38 .13	76.7 0.7	29.81 .64	61.8 0.7	5.10 .13	29.1 0.6
15.2	11.77 .11	76.2 1.0	35.26 .11	75.9 0.9	29.19 .60	60.8 1.3	4.98 .11	28.3 0.8
25.2	11.67 .08	75.1 1.2	35.17 .08	74.9 1.1	28.62 .53	59.3 1.8	4.88 .08	27.4 1.0
Dec. 5.1	11.61 −.04	73.8 1.4	35.10 .04	73.7 1.3	28.13 .45	57.2 2.3	4.82 .05	26.2 1.2
15.1	11.58 .00	72.4 −1.6	35.08 −.01	72.3 −1.4	27.72 −.36	54.7 −2.7	4.80 −.01	25.0 −1.3
25.1	11.60 +.03	70.7 1.7	35.09 +.03	70.8 1.6	27.40 .26	51.8 3.0	4.81 +.03	23.6 1.4
35.0	11.65 +.07	69.0 −1.8	35.14 +.07	69.2 −1.7	27.20 −.15	48.6 −3.3	4.86 +.07	22.1 −1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Aquilæ.		α² Capricorni.		κ Cephei.		α Pavonis.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 19 58	° ′ + 6 58	h m 20 12	° ′ −12 52	h m 20 12	° ′ +77 22	h m 20 17	° ′ −57 4
	s	″	s	″	s	″	s	″
Jan. 0.1	52.98 +.04	25.5 −1.5	5.26 +.05	45.5 −0.4	22.66 −.47	80.3 −3.1	8.61 +.03	54.1 +2.2
10.0	53.05 .08	24.0 1.5	5.32 .08	45.8 0.3	22.28 .28	77.1 3.3	8.67 .10	51.8 2.3
20.0	53.14 .12	22.5 1.5	5.42 .12	46.1 0.3	22.08 −.10	73.8 3.4	8.81 .17	49.5 2.4
30.0	53.27 .15	21.1 1.4	5.56 .15	46.3 −0.2	22.08 +.09	70.4 3.4	9.01 .23	47.1 2.4
Feb. 9.0	53.44 .18	19.8 1.2	5.72 .18	46.4 0.0	22.26 .28	67.0 3.2	9.27 .29	44.7 2.4
18.9	53.63 +.20	18.7 −0.9	5.92 +.21	46.4 +0.1	22.63 +.45	63.9 −3.0	9.59 +.34	42.3 +2.3
28.9	53.85 .23	17.9 0.7	6.14 .23	46.2 0.3	23.17 .61	61.0 2.6	9.96 .39	40.0 2.2
Mar. 10.9	54.09 .25	17.4 −0.4	6.38 .25	45.8 0.5	23.86 .75	58.6 2.1	10.37 .43	37.9 2.0
20.8	54.35 .27	17.2 0.0	6.65 .27	45.2 0.7	24.67 .86	56.7 1.6	10.82 .46	35.9 1.8
30.8	54.63 .28	17.4 +0.4	6.93 .29	44.5 0.8	25.58 .94	55.4 1.0	11.30 .49	34.2 1.6
Apr. 9.8	54.92 +.29	17.9 +0.7	7.23 +.30	43.6 +1.0	26.56 +.98	54.7 −0.4	11.81 +.52	32.7 +1.4
19.8	55.22 .30	18.8 1.0	7.54 .31	42.5 1.1	27.56 1.00	54.7 +0.2	12.33 .53	31.5 1.1
29.7	55.53 .30	20.0 1.3	7.86 .32	41.3 1.2	28.55 .98	55.2 0.9	12.86 .53	30.6 0.7
May 9.7	55.83 .30	21.5 1.6	8.18 .32	40.1 1.3	29.51 .93	56.4 1.5	13.40 .53	30.0 0.4
19.7	56.13 .29	23.2 1.8	8.50 .31	38.8 1.3	30.41 .85	58.2 2.0	13.93 .51	29.8 +0.1
29.7	56.41 +.27	25.1 +1.9	8.81 +.30	37.4 +1.3	31.21 +.74	60.4 +2.4	14.43 +.49	29.9 −0.3
June 8.6	56.67 .25	27.0 2.0	9.09 .28	36.2 1.2	31.89 .60	63.1 2.8	14.90 .45	30.4 0.6
18.6	56.91 .22	29.0 2.0	9.36 .26	35.0 1.1	32.43 .46	66.2 3.2	15.34 .41	31.2 0.9
28.6	57.11 .19	31.0 2.0	9.59 .21	33.9 1.0	32.82 .31	69.5 3.4	15.72 .35	32.3 1.2
July 8.5	57.28 .15	33.0 1.9	9.78 .17	33.0 0.8	33.05 +.15	72.9 3.5	16.04 .28	33.7 1.5
18.5	57.41 +.11	34.8 +1.8	9.94 +.13	32.2 +0.7	33.11 −.02	76.5 +3.6	16.29 +.21	35.3 −1.7
28.5	57.49 .06	36.5 1.6	10.05 .09	31.6 0.5	33.01 .19	80.1 3.5	16.46 .14	37.2 1.9
Aug. 7.5	57.53 +.02	38.0 1.4	10.12 +.04	31.1 0.3	32.74 .35	83.6 3.4	16.56 +.06	39.2 2.0
17.4	57.52 −.03	39.4 1.2	10.13 .00	30.8 0.2	32.30 .50	86.9 3.2	16.58 −.02	41.2 2.0
27.4	57.47 .07	40.5 1.0	10.11 −.04	30.7 +0.1	31.72 .65	90.1 3.0	16.52 .09	43.2 1.9
Sept. 6.4	57.39 −.10	41.4 +0.8	10.04 −.08	30.7 −0.1	31.01 −.77	92.9 +2.7	16.39 −.16	45.0 −1.8
16.4	57.27 .13	42.0 0.5	9.94 .11	30.8 0.2	30.18 .88	95.4 2.3	16.19 .22	46.7 1.6
26.3	57.14 .15	42.4 0.3	9.82 .13	31.0 0.2	29.25 .97	97.5 1.9	15.95 .26	48.2 1.3
Oct. 6.3	56.98 .16	42.7 +0.1	9.67 .15	31.3 0.3	28.24 1.03	99.2 1.4	15.67 .29	49.3 0.9
16.3	56.82 .16	42.6 −0.2	9.52 .15	31.6 0.3	27.18 1.07	100.3 0.9	15.36 .30	50.1 0.6
26.2	56.66 −.15	42.3 −0.4	9.37 −.15	32.0 −0.3	26.10 −1.08	101.0 +0.3	15.06 −.30	50.4 −0.1
Nov. 5.2	56.52 .14	41.8 0.6	9.23 .13	32.3 0.4	25.02 1.06	101.0 −0.2	14.76 .28	50.4 +0.3
15.2	56.39 .11	41.0 0.8	9.11 .10	32.7 0.4	23.97 1.03	100.5 0.8	14.49 .25	49.8 0.7
25.2	56.29 .08	40.1 1.0	9.01 .08	33.1 0.4	22.99 .94	99.4 1.4	14.27 .22	48.9 1.1
Dec. 5.1	56.23 .05	39.0 1.2	8.94 .03	33.5 0.4	22.08 .84	97.8 1.9	14.10 .14	47.6 1.5
15.1	56.19 −.02	37.8 −1.3	8.91 −.01	33.9 −0.4	21.30 −.72	95.7 −2.3	13.99 −.07	46.0 +1.8
25.1	56.19 +.02	36.4 1.4	8.92 +.02	34.2 0.4	20.65 .57	93.1 2.7	13.94 −.01	44.1 2.0
35.1	56.23 +.06	34.9 −1.5	8.96 +.06	34.6 −0.4	20.17 −.41	90.2 −3.1	13.97 +.06	41.9 +2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Cygni.		π Capricorni.		ε Delphini.		Groombridge 3241.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 20 18	° ′ +39 54	h m 20 21	° ′ −18 33	h m 20 28	° ′ +10 56	h m 20 30	° ′ +72 9
	s	″	s	″	s	″	s	″
Jan. 0.1	21.18 −.04	47.7 −2.8	10.01 +.04	56.1 0.0	4.29 +.01	16.1 −1.6	23.22 −.35	69.8 −3.1
10.0	21.17 +.01	44.9 2.8	10.07 .08	56.1 0.0	4.32 .05	14.5 1.6	22.93 .22	66.8 3.2
20.0	21.21 .06	42.0 2.9	10.16 .11	56.0 +0.1	4.39 .08	12.9 1.6	22.78 −.09	63.5 3.3
30.0	21.29 .11	39.1 2.8	10.29 .15	55.8 0.2	4.48 .11	11.3 1.5	22.75 +.04	60.1 3.4
Feb. 9.0	21.42 .15	36.4 2.6	10.46 .18	55.5 0.3	4.62 .14	9.8 1.3	22.86 .17	56.7 3.3
18.9	21.59 +.19	33.8 −2.4	10.65 +.20	55.1 +0.5	4.78 +.18	8.6 −1.1	23.10 +.30	53.5 −3.1
28.9	21.81 .23	31.6 2.0	10.87 .23	54.6 0.6	4.97 .20	7.6 0.8	23.46 .42	50.6 2.7
Mar. 10.9	22.06 .27	29.8 1.5	11.11 .26	53.9 0.7	5.19 .23	6.9 0.5	23.93 .52	48.1 2.3
20.9	22.35 .30	28.6 1.0	11.38 .28	53.1 0.9	5.43 .25	6.6 −0.1	24.49 .60	46.1 1.8
30.8	22.66 .32	27.8 −0.5	11.67 .30	52.2 1.0	5.70 .27	6.6 +0.2	25.14 .67	44.6 1.2
Apr. 9.8	23.00 +.34	27.7 +0.1	11.98 +.31	51.1 +1.1	5.98 +.29	7.1 +0.6	25.84 +.71	43.8 −0.5
19.8	23.34 .35	28.1 0.7	12.30 .32	50.0 1.2	6.28 .30	7.9 1.0	26.57 .74	43.6 +0.1
29.7	23.70 .35	29.1 1.2	12.62 .33	48.8 1.2	6.59 .31	9.1 1.3	27.31 .73	44.0 0.7
May 9.7	24.05 .34	30.6 1.7	12.95 .33	47.5 1.2	6.90 .31	10.6 1.6	28.04 .71	45.0 1.3
19.7	24.39 .33	32.5 2.1	13.28 .32	46.3 1.2	7.20 .30	12.3 1.8	28.73 .66	46.7 1.9
29.7	24.72 +.31	34.9 +2.5	13.60 +.31	45.1 +1.1	7.50 +.29	14.3 +2.0	29.36 +.60	48.8 +2.4
June 8.6	25.01 .28	37.6 2.8	13.90 .29	44.0 1.0	7.78 .27	16.4 2.1	29.92 .52	51.4 2.8
18.6	25.27 .24	40.5 3.0	14.18 .26	43.0 0.9	8.03 .24	18.6 2.2	30.39 .42	54.4 3.1
28.6	25.49 .20	43.7 3.2	14.43 .23	42.1 0.8	8.26 .21	20.8 2.2	30.76 .31	57.7 3.3
July 8.6	25.67 .15	46.9 3.2	14.64 .19	41.5 0.6	8.45 .17	23.0 2.1	31.01 .19	61.2 3.5
18.5	25.79 +.10	50.1 +3.2	14.81 +.15	41.0 +0.4	8.60 +.13	25.1 +2.0	31.15 +.07	64.8 +3.6
28.5	25.86 +.04	53.3 3.1	14.93 .10	40.7 +0.2	8.71 .09	27.1 1.9	31.17 −.05	68.4 3.6
Aug. 7.5	25.88 −.01	56.3 2.9	15.01 .05	40.6 0.0	8.77 +.04	29.0 1.7	31.06 .17	72.0 3.5
17.4	25.84 .06	59.1 2.7	15.04 +.01	40.6 −0.1	8.79 .00	30.6 1.5	30.84 .28	75.5 3.4
27.4	25.76 .11	61.7 2.4	15.02 −.04	40.8 0.2	8.76 −.04	32.0 1.3	30.50 .38	78.8 3.2
Sept. 6.4	25.63 −.15	63.9 +2.1	14.96 −.08	41.0 −0.3	8.70 −.08	33.1 +1.0	30.07 −.48	81.8 +2.9
16.4	25.46 .19	65.8 1.7	14.87 .11	41.4 0.4	8.60 .11	34.1 0.8	29.54 .57	84.5 2.5
26.3	25.25 .22	67.4 1.3	14.74 .13	41.8 0.4	8.47 .13	34.7 0.5	28.93 .64	86.8 2.1
Oct. 6.3	25.03 .23	68.5 0.9	14.60 .15	42.2 0.4	8.33 .15	35.1 +0.3	28.27 .69	88.6 1.6
16.3	24.79 .24	69.1 +0.4	14.45 .15	42.7 0.4	8.17 .16	35.2 0.0	27.56 .72	90.0 1.1
26.2	24.55 −.24	69.3 0.0	14.29 −.15	43.1 −0.4	8.02 −.15	35.1 −0.3	26.83 −.73	90.8 +0.5
Nov. 5.2	24.32 .23	69.0 −0.5	14.14 .14	43.4 0.3	7.87 .14	34.7 0.5	26.10 .73	91.1 0.0
15.2	24.10 .21	68.3 1.0	14.01 .12	43.7 0.3	7.73 .12	34.1 0.8	25.38 .70	90.8 −0.6
25.2	23.91 .16	67.0 1.4	13.91 .09	44.0 0.2	7.61 .10	33.2 1.0	24.69 .66	89.9 1.2
Dec. 5.1	23.75 .14	65.3 1.9	13.84 .06	44.2 0.2	7.52 .07	32.1 1.2	24.06 .59	88.5 1.7
15.1	23.63 −.10	63.3 −2.2	13.80 −.02	44.3 −0.1	7.47 −.04	30.8 −1.4	23.51 −.51	86.5 −2.2
25.1	23.54 .06	60.9 2.5	13.80 +.02	44.3 0.0	7.44 −.01	29.3 1.5	23.05 .41	84.0 2.6
35.1	23.51 −.02	58.2 −2.8	13.84 +.06	44.4 0.0	7.45 +.03	27.8 −1.6	22.70 −.30	81.2 −3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cygni.		μ Aquarii.		12 Year Cat. 1879.		ν Cygni.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$20^{h}\ 37^{m}$	$+44^{\circ}\ 53'$	$20^{h}\ 46^{m}$	$-\ 9^{\circ}\ 22'$	$20^{h}\ 52^{m}$	$+80^{\circ}\ 8'$	$20^{h}\ 53^{m}$	$+40^{\circ}\ 44'$
	s	"	s	"	s	"	s	"
Jan. 0.1	44.74 −.07	51.1 −2.7	51.27 +.01	75.6 −0.5	17.95 −.82	66.1 −2.6	8.86 −.07	77.6 −2.5
10.1	44.69 −.02	48.3 2.9	51.30 .05	76.1 0.4	17.24 .60	63.3 2.9	8.81 −.03	75.0 2.7
20.0	44.69 +.00	45.4 3.0	51.37 .09	76.5 0.4	16.75 .37	60.2 3.2	8.80 +.02	72.3 2.8
30.0	44.74 .08	42.4 2.9	51.46 .11	76.9 0.3	16.50 −.13	56.9 3.3	8.84 .06	69.5 2.8
Feb. 9.0	44.85 .13	39.5 2.8	51.59 .14	77.1 −0.1	16.49 +.11	53.6 3.3	8.93 .11	66.7 2.7
19.0	45.00 +.18	36.7 −2.6	51.75 +.17	77.1 0.0	16.72 +.35	50.3 −3.2	9.06 +.15	64.1 −2.5
28.9	45.20 .22	34.3 2.2	51.93 .20	77.0 +0.2	17.19 .57	47.3 2.9	9.24 .20	61.8 2.2
Mar. 10.9	45.45 .26	32.3 1.8	52.14 .22	76.6 0.4	17.87 .78	44.6 2.5	9.46 .24	59.8 1.8
20.9	45.73 .30	30.7 1.3	52.38 .25	76.1 0.6	18.75 .96	42.3 2.0	9.72 .28	58.3 1.3
30.8	46.05 .33	29.7 0.7	52.64 .27	75.3 0.9	19.78 1.09	40.5 1.5	10.01 .31	57.3 0.8
Apr. 9.8	46.39 +.35	29.3 −0.1	52.93 +.29	74.3 +1.1	20.93 +1.18	39.3 −0.9	10.33 +.33	56.9 −0.2
19.8	46.76 .37	29.5 +0.5	53.23 .30	73.2 1.2	22.15 1.24	38.7 −0.3	10.67 .35	57.0 +0.4
29.8	47.13 .37	30.2 1.0	53.54 .31	71.9 1.4	23.41 1.25	38.7 +0.3	11.03 .36	57.7 1.0
May 9.7	47.51 .37	31.5 1.5	53.86 .32	70.4 1.5	24.66 1.22	39.3 0.9	11.39 .36	58.9 1.5
19.7	47.88 .36	33.4 2.0	54.18 .32	68.9 1.5	25.86 1.15	40.6 1.5	11.75 .35	60.6 2.0
29.7	48.23 +.34	35.6 +2.4	54.49 +.31	67.3 +1.6	26.97 +1.05	42.4 +2.0	12.10 +.33	62.8 +2.4
June 8.6	48.56 .31	38.3 2.8	54.79 .29	65.7 1.5	27.96 .91	44.7 2.5	12.42 .31	65.3 2.7
18.6	48.85 .27	41.2 3.1	55.07 .27	64.2 1.4	28.80 .75	47.4 2.9	12.72 .29	68.2 2.9
28.6	49.10 .22	44.4 3.2	55.33 .24	62.8 1.3	29.46 .57	50.5 3.2	12.98 .24	71.2 3.1
July 8.6	49.30 .17	47.7 3.3	55.55 .20	61.6 1.2	29.94 .37	53.8 3.4	13.19 .19	74.4 3.2
18.5	49.44 +.12	51.0 +3.3	55.73 +.16	60.5 +1.0	30.21 +.17	57.3 +3.6	13.36 +.14	77.7 +3.2
28.5	49.54 +.06	54.4 3.3	55.87 .12	59.5 0.8	30.28 −.04	60.9 3.6	13.47 .09	80.9 3.2
Aug. 7.5	49.57 .00	57.6 3.2	55.96 .07	58.8 0.6	30.13 .24	64.6 3.6	13.53 +.03	84.1 3.1
17.5	49.54 −.05	60.7 3.0	56.01 +.03	58.3 0.4	29.79 .45	68.1 3.5	13.54 −.02	87.1 2.9
27.4	49.47 .10	63.6 2.7	56.02 −.02	57.9 0.3	29.24 .64	71.6 3.3	13.49 .07	89.9 2.7
Sept. 6.4	49.34 −.15	66.1 +2.4	55.98 −.06	57.7 +0.1	28.51 −.81	74.8 +3.1	13.40 −.12	92.5 +2.4
16.4	49.17 .19	68.3 2.0	55.91 .09	57.7 0.0	27.61 .97	77.8 2.8	13.26 .16	94.7 2.1
26.3	48.96 .22	70.2 1.6	55.80 .11	57.8 −0.2	26.57 1.10	80.5 2.4	13.09 .19	96.5 1.7
Oct. 6.3	48.72 .24	71.6 1.2	55.68 .13	58.0 0.3	25.40 1.21	82.7 2.0	12.89 .21	98.0 1.3
16.3	48.47 .26	72.6 0.7	55.54 .14	58.3 0.3	24.14 1.30	84.5 1.5	12.67 .23	99.1 0.8
26.3	48.21 −.26	73.1 +0.2	55.39 −.14	58.7 −0.4	22.81 −1.35	85.8 +1.0	12.44 −.23	99.6 +0.3
Nov. 5.2	47.95 .25	73.1 −0.3	55.25 .13	59.1 0.4	21.44 1.37	86.6 +0.5	12.20 .23	99.7 −0.1
15.2	47.70 .24	72.6 0.8	55.12 .12	59.6 0.5	20.08 1.36	86.8 −0.1	11.98 .21	99.4 0.6
25.2	47.48 .21	71.5 1.2	55.01 .10	60.1 0.5	18.75 1.30	86.4 0.7	11.78 .19	98.5 1.1
Dec. 5.2	47.28 .18	70.0 1.7	54.93 .07	60.6 0.5	17.49 1.21	85.4 1.3	11.59 .17	97.2 1.5
15.1	47.12 −.14	68.1 −2.1	54.88 −.04	61.1 −0.5	16.34 −1.08	83.8 −1.8	11.44 −.13	95.5 −1.9
25.1	46.99 .10	65.8 2.5	54.85 −.01	61.6 0.5	15.33 .92	81.8 2.3	11.33 .09	93.3 2.3
35.1	46.92 −.05	63.2 −2.8	54.86 +.03	62.1 −0.5	14.51 −.74	79.2 −2.8	11.25 −.06	90.9 −2.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	61¹ Cygni.		ζ Cygni.		α Cephei.		1 Pegasi.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 21 2	° ′ +38 13	h m 21 8	° ′ +29 46	h m 21 15	° ′ +62 7	h m 21 17	° ′ +19 20
	s	″	s	″	s	″	s	″
Jan. 0.1	3.92 −.06	22.4 −2.3	20.99 −.06	74.4 −2.1	58.39 −.25	59.3 −2.5	6.52 −.04	44.0 −1.7
10.1	3.88 −.02	20.0 2.5	20.96 −.02	72.2 2.2	58.18 .18	56.7 2.8	6.49 −.01	42.2 1.8
20.0	3.88 +.02	17.5 2.6	20.96 +.02	69.9 2.3	58.04 .10	53.7 3.1	6.50 +.02	40.4 1.8
30.0	3.92 .06	14.9 2.6	20.99 .06	67.5 2.3	57.97 −.02	50.5 3.2	6.54 .06	38.5 1.8
Feb. 9.0	4.01 .11	12.3 2.5	21.07 .10	65.2 2.2	57.99 +.06	47.3 3.2	6.62 .10	36.7 1.7
19.0	4.14 +.15	9.9 −2.3	21.19 +.13	63.1 −2.0	58.09 +.14	44.1 −3.1	6.73 +.13	35.1 −1.5
28.9	4.31 .19	7.7 2.0	21.34 .17	61.2 1.7	58.27 .22	41.2 2.8	6.87 .16	33.7 1.2
Mar. 10.9	4.53 .23	5.9 1.6	21.53 .21	59.6 1.4	58.53 .29	38.5 2.4	7.05 .19	32.6 0.9
20.9	4.78 .27	4.6 1.1	21.76 .24	58.4 1.0	58.86 .36	36.2 2.0	7.26 .22	31.9 0.5
30.9	5.07 .30	3.7 0.6	22.02 .27	57.7 −0.5	59.25 .42	34.5 1.5	7.50 .25	31.5 −0.1
Apr. 9.8	5.39 +.33	3.3 −0.1	22.30 +.29	57.5 0.0	59.70 +.46	33.3 −0.9	7.77 +.28	31.6 +0.3
19.8	5.73 .35	3.5 +0.5	22.61 .31	57.8 +0.5	60.19 .50	32.8 −0.3	8.05 .30	32.2 0.7
29.8	6.09 .36	4.3 1.0	22.93 .33	58.6 1.0	60.70 .52	32.8 +0.3	8.36 .31	33.1 1.1
May 9.7	6.45 .36	5.6 1.5	23.26 .33	59.8 1.5	61.23 .52	33.5 0.9	8.68 .32	34.4 1.5
19.7	6.81 .36	7.3 2.0	23.60 .33	61.5 1.9	61.75 .51	34.8 1.5	9.00 .32	36.1 1.8
29.7	7.17 +.34	9.5 +2.4	23.93 +.32	63.6 +2.2	62.25 +.48	36.6 +2.0	9.32 +.31	38.1 +2.1
June 8.7	7.50 .32	12.1 2.7	24.24 .30	66.0 2.5	62.72 .44	38.9 2.5	9.62 .30	40.4 2.3
18.6	7.81 .29	14.9 3.0	24.53 .27	68.6 2.7	63.14 .39	41.7 2.9	9.91 .28	42.8 2.5
28.6	8.08 .25	18.0 3.2	24.79 .24	71.4 2.8	63.51 .33	44.8 3.2	10.17 .26	45.3 2.6
July 8.6	8.32 .21	21.2 3.3	25.02 .20	74.3 2.9	63.81 .26	48.1 3.4	10.40 .21	47.9 2.6
18.6	8.50 +.16	24.5 +3.3	25.20 +.16	77.2 +2.9	64.04 +.19	51.7 +3.6	10.59 +.17	50.5 +2.5
28.5	8.64 .11	27.8 3.2	25.33 .11	80.1 2.8	64.19 .11	55.3 3.6	10.74 .13	52.9 2.4
Aug. 7.5	8.72 +.05	31.0 3.1	25.42 .06	82.9 2.7	64.25 +.03	59.0 3.6	10.85 .08	55.3 2.3
17.5	8.75 .00	34.0 2.9	25.46 +.02	85.6 2.5	64.24 −.05	62.6 3.5	10.91 +.03	57.5 2.1
27.4	8.73 −.04	36.9 2.7	25.45 −.03	88.0 2.3	64.15 .13	66.1 3.4	10.92 −.01	59.5 1.9
Sept. 6.4	8.67 −.09	39.5 +2.4	25.40 −.07	90.2 +2.0	63.98 −.20	69.3 +3.1	10.89 −.05	61.2 +1.6
16.4	8.56 .13	41.8 2.1	25.31 .11	92.1 1.7	63.75 .26	72.3 2.8	10.83 .08	62.7 1.3
26.4	8.41 .16	43.7 1.7	25.18 .14	93.7 1.4	63.46 .32	75.0 2.4	10.73 .11	63.9 1.0
Oct. 6.3	8.23 .18	45.2 1.3	25.03 .16	94.9 1.1	63.11 .37	77.2 2.0	10.60 .13	64.8 0.7
16.3	8.04 .20	46.4 0.9	24.86 .17	95.8 0.7	62.73 .40	79.0 1.5	10.46 .15	65.4 0.4
26.3	7.84 −.20	47.1 +0.5	24.68 −.18	96.3 +0.3	62.32 −.42	80.4 +1.0	10.31 −.15	65.7 +0.1
Nov. 5.3	7.63 .20	47.4 0.0	24.50 .18	96.4 −0.1	61.90 .42	81.2 +0.5	10.15 .15	65.7 −0.2
15.2	7.43 .19	47.1 −0.4	24.32 .17	96.0 0.5	61.48 .42	81.4 0.0	10.00 .14	65.3 0.5
25.2	7.25 .17	46.5 0.9	24.16 .16	95.3 0.9	61.06 .40	81.1 −0.6	9.86 .13	64.7 0.8
Dec. 5.2	7.08 .15	45.3 1.3	24.01 .14	94.2 1.3	60.67 .37	80.2 1.2	9.74 .11	63.7 1.1
15.1	6.95 −.12	43.8 −1.7	23.88 −.11	92.7 −1.6	60.32 −.33	78.7 −1.7	9.65 −.08	62.5 −1.4
25.1	6.84 .09	41.9 2.1	23.79 .08	90.9 1.9	60.01 .28	76.7 2.2	9.58 .06	61.0 1.6
35.1	3.78 −.05	39.7 −2.4	23.73 −.04	88.9 −2.1	59.76 −.22	74.3 −2.7	9.54 −.02	59.3 −1.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.		β Cephei.		ξ Aquarii.		ε Pegasi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	21 25	− 6 2	21 27	+70 5	21 32	− 8 19	21 38	+ 9 22
	s	″	s	″	s	″	s	″
Jan. 0.1	54.04 −.02	40.5 −0.6	12.56 −.41	32.5 −2.4	1.87 −.03	72.8 −0.5	54.30 −.04	58.2 −1.3
10.1	54.03 +.01	41.1 0.6	12.19 .32	29.9 2.8	1.85 .00	73.2 0.4	54.27 −.01	56.9 1.3
20.1	54.05 .04	41.7 0.5	11.92 .22	27.0 3.0	1.87 +.03	73.6 0.3	54.27 +.02	55.6 1.3
30.0	54.11 .07	42.1 0.4	11.76 −.11	23.9 3.2	1.92 .06	73.9 0.2	54.30 .05	54.4 1.2
Feb. 9.0	54.19 .10	42.4 −0.2	11.71 +.01	20.6 3.2	2.00 .09	74.0 −0.1	54.36 .08	53.2 1.1
19.0	54.31 +.13	42.5 0.0	11.78 +.13	17.4 −3.2	2.11 +.12	74.0 +0.1	54.46 +.11	52.2 −0.9
28.9	54.45 .16	42.5 +0.2	11.97 .24	14.3 3.0	2.25 .16	73.8 0.3	54.58 .14	51.3 0.7
Mar. 10.9	54.63 .19	42.2 0.4	12.27 .35	11.4 2.6	2.43 .19	73.4 0.5	54.74 .17	50.7 0.4
20.9	54.83 .22	41.7 0.6	12.67 .44	9.0 2.2	2.63 .21	72.8 0.7	54.93 .20	50.5 −0.1
30.9	55.06 .24	40.9 0.9	13.16 .53	7.0 1.7	2.86 .24	71.9 1.0	55.15 .23	50.6 +0.2
Apr. 9.8	55.32 +.27	40.0 +1.1	13.73 +.60	5.5 −1.2	3.11 +.27	70.8 +1.2	55.39 +.25	51.0 +0.6
19.8	55.60 .29	38.7 1.3	14.35 .64	4.7 −0.5	3.39 .29	69.5 1.4	55.66 .28	51.7 1.0
29.8	55.90 .30	37.3 1.5	15.02 .67	4.4 +0.1	3.69 .30	68.1 1.5	55.96 .30	52.8 1.3
May 9.8	56.21 .31	35.8 1.6	15.70 .68	4.8 0.7	4.00 .32	66.5 1.7	56.26 .31	54.3 1.5
19.7	56.53 .32	34.1 1.7	16.38 .67	5.8 1.3	4.32 .32	64.7 1.7	56.58 .32	56.0 1.8
29.7	56.85 +.31	32.3 +1.8	17.04 +.63	7.4 +1.8	4.64 +.30	63.0 +1.7	56.90 +.31	57.9 +2.0
June 8.7	57.16 .31	30.5 1.8	17.65 .58	9.5 2.3	4.96 .31	61.2 1.7	57.21 .30	59.9 2.1
18.6	57.46 .29	28.7 1.7	18.21 .52	12.1 2.7	5.27 .29	59.5 1.6	57.50 .29	62.1 2.2
28.6	57.74 .26	27.1 1.6	18.68 .43	15.0 3.1	5.55 .27	57.9 1.5	57.78 .26	64.3 2.2
July 8.6	57.98 .23	25.5 1.5	19.08 .34	18.3 3.4	5.80 .24	56.4 1.4	58.03 .23	66.6 2.2
18.6	58.20 +.19	24.1 +1.3	19.37 +.24	21.8 +3.6	6.02 +.20	55.1 +1.2	58.24 +.20	68.7 +2.1
28.5	58.37 .15	22.9 1.1	19.56 .14	25.5 3.7	6.20 .16	54.0 1.0	58.42 .15	70.8 2.0
Aug. 7.5	58.50 .11	21.8 0.9	19.65 +.03	29.2 3.7	6.34 .11	53.1 0.8	58.55 .11	72.7 1.8
17.5	58.58 .06	21.0 0.7	19.63 −.07	32.9 3.6	6.43 .07	52.4 0.6	58.63 .07	74.4 1.6
27.5	58.62 +.02	20.4 0.5	19.50 .18	36.6 3.5	6.47 +.03	51.9 0.4	58.68 +.02	76.0 1.4
Sept. 6.5	58.62 −.02	20.0 +0.3	19.27 −.27	40.0 +3.3	6.48 −.01	51.6 +0.2	58.68 −.02	77.3 +1.2
16.4	58.58 .06	19.8 +0.1	18.95 .36	43.2 3.1	6.44 .05	51.5 0.0	58.64 .05	78.3 0.9
26.4	58.50 .09	19.7 −0.1	18.55 .43	46.2 2.7	6.37 .08	51.6 −0.1	58.57 .08	79.1 0.7
Oct. 6.3	58.40 .11	19.8 0.3	18.07 .50	48.7 2.3	6.28 .11	51.8 0.2	58.47 .11	79.7 0.5
16.3	58.28 .12	20.1 0.4	17.54 .55	50.8 1.9	6.16 .12	52.1 0.3	58.36 .12	80.0 +0.2
26.3	58.15 −.13	20.4 −0.4	16.97 −.59	52.5 +1.4	6.03 −.13	52.5 −0.4	58.23 −.13	80.1 0.0
Nov. 5.3	58.02 .13	20.8 0.5	16.36 .61	53.6 0.8	5.90 .13	53.0 0.5	58.09 .13	80.0 −0.2
15.2	57.89 .12	21.3 0.5	15.75 .61	54.1 +0.2	5.77 .12	53.5 0.5	57.96 .13	79.6 0.5
25.2	57.77 .11	21.9 0.6	15.14 .60	54.1 −0.4	5.65 .11	54.0 0.5	57.83 .12	79.1 0.7
Dec. 5.2	57.67 .09	22.5 0.6	14.55 .57	53.4 0.9	5.55 .09	54.5 0.5	57.72 .10	78.3 0.9
15.2	57.60 −.06	23.1 −0.6	14.00 −.52	52.2 −1.5	5.47 −.07	55.1 −0.5	57.63 −.08	77.4 −1.0
25.1	57.55 .04	23.7 0.6	13.52 .45	50.5 2.0	5.42 .04	55.6 0.5	57.56 .06	76.3 1.1
35.1	57.52 −.01	24.3 −0.6	13.10 −.38	48.2 −2.5	5.39 −.01	56.1 −0.5	57.52 −.03	75.1 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	11 Cephei.		μ Capricorni.		79 Draconis.		α Aquarii.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.
	h m 21 40	° ′ +70 48	h m 21 47	° ′ -14 3	h m 21 51	° ′ +73 11	h m 22 0	° ′ - 0 50
	s	″	s	″	s	″	s	″
Jan. 0.1	17.16 -.45	73.9 -2.2	26.31 -.03	31.2 -0.2	27.23 -.56	53.4 -2.1	15.88 -.05	30.8 -0.8
10.1	16.75 .36	71.5 2.6	26.29 -.01	31.3 -0.1	26.73 .45	51.1 2.5	15.84 -.02	31.6 0.7
20.1	16.44 .26	68.7 2.9	26.30 +.02	31.4 0.0	26.33 .34	48.5 2.8	15.84 .00	32.3 0.7
30.0	16.23 .15	65.6 3.1	26.34 .05	31.3 +0.2	26.04 .22	45.5 3.1	15.85 +.03	33.0 0.6
Feb. 9.0	16.15 -.03	62.4 3.2	26.41 .08	31.0 0.3	25.89 -.06	42.3 3.2	15.90 .06	33.5 0.5
19.0	16.18 +.09	59.2 -3.2	26.50 +.11	30.6 +0.5	25.88 +.06	39.0 -3.2	15.98 +.09	33.9 -0.3
Mar. 1.0	16.33 .21	56.0 3.0	26.63 .14	30.0 0.7	26.01 .20	35.9 3.1	16.09 .12	34.1 -0.1
10.9	16.60 .32	53.1 2.8	26.80 .17	29.2 0.9	26.27 .33	32.9 2.8	16.22 .15	34.0 +0.1
20.9	16.99 .43	50.6 2.3	26.99 .20	28.3 1.1	26.67 .45	30.2 2.4	16.40 .19	33.8 0.4
30.9	17.47 .52	48.4 1.8	27.21 .23	27.1 1.3	27.18 .56	28.0 2.0	16.60 .22	33.2 0.7
Apr. 9.9	18.03 +.60	46.9 -1.3	27.46 +.26	25.8 +1.4	27.79 +.65	26.3 -1.5	16.83 +.24	32.3 +1.0
19.8	18.67 .65	45.8 0.7	27.74 .29	24.2 1.5	28.48 .72	25.1 0.9	17.09 .27	31.2 1.2
29.8	19.35 .69	45.5 -0.1	28.03 .31	22.6 1.6	29.23 .76	24.5 -0.3	17.37 .29	29.9 1.4
May 9.8	20.05 .70	45.7 +0.5	28.35 .32	20.9 1.7	30.02 .79	24.5 +0.3	17.68 .31	28.3 1.6
19.7	20.76 .70	46.5 1.1	28.67 .33	19.1 1.8	30.81 .78	25.2 0.9	17.99 .32	26.6 1.8
29.7	21.44 +.67	47.9 +1.7	29.01 +.33	17.4 +1.7	31.59 +.76	26.4 +1.5	18.31 +.32	24.7 +1.9
June 8.7	22.10 .62	49.9 2.2	29.33 .32	15.7 1.6	32.32 .71	28.2 2.0	18.63 .31	22.7 2.0
18.7	22.69 .56	52.3 2.6	29.65 .31	14.1 1.5	33.01 .64	30.5 2.5	18.94 .30	20.7 2.0
28.6	23.21 .48	55.2 3.0	29.95 .28	12.6 1.4	33.61 .56	33.2 2.9	19.23 .28	18.8 1.9
July 8.6	23.65 .39	58.4 3.3	30.22 .25	11.3 1.2	34.12 .46	36.3 3.2	19.49 .25	16.9 1.8
18.6	23.98 +.29	61.8 +3.5	30.45 +.22	10.2 +1.0	34.52 +.35	39.7 +3.5	19.73 +.22	15.2 +1.7
28.6	24.22 .18	65.5 3.7	30.65 .18	9.4 0.8	34.81 .23	43.3 3.6	19.92 .18	13.6 1.5
Aug. 7.5	24.35 +.07	69.2 3.7	30.81 .13	8.7 0.5	34.98 +.11	47.0 3.7	20.08 .14	12.2 1.3
17.5	24.36 -.04	73.0 3.7	30.92 .08	8.4 0.3	35.02 -.01	50.8 3.7	20.20 .10	11.0 1.1
27.5	24.27 .14	76.6 3.6	30.98 +.04	8.2 +0.1	34.94 .14	54.6 3.7	20.27 .05	10.0 0.9
Sept. 6.4	24.07 -.24	80.2 +3.4	31.00 .00	8.2 -0.1	34.75 -.25	58.2 +3.5	20.29 +.01	9.2 +0.6
16.4	23.78 .34	83.5 3.2	30.98 -.04	8.4 0.3	34.44 .36	61.6 3.3	20.28 -.03	8.7 0.4
26.4	23.39 .42	86.6 2.9	30.92 .07	8.8 0.4	34.03 .46	64.8 3.0	20.23 .06	8.4 +0.2
Oct. 6.4	22.93 .49	89.3 2.5	30.84 .10	9.2 0.5	33.53 .54	67.7 2.7	20.16 .09	8.2 0.0
16.3	22.41 .55	91.6 2.1	30.73 .12	9.8 0.5	32.95 .61	70.2 2.2	20.06 .11	8.3 -0.1
26.3	21.83 -.59	93.4 +1.6	30.60 -.13	10.3 -0.6	32.31 -.67	72.2 +1.7	19.94 -.12	8.5 -0.3
Nov. 5.3	21.22 .62	94.7 1.0	30.47 .13	10.9 0.6	31.62 .70	73.7 1.2	19.82 .12	8.8 0.4
15.3	20.59 .63	95.5 +0.5	30.34 .12	11.5 0.5	30.90 .72	74.7 0.7	19.70 .12	9.2 0.5
25.2	19.96 .62	95.7 -0.1	30.22 .11	12.0 0.5	30.18 .72	75.1 +0.1	19.58 .11	9.8 0.6
Dec. 5.2	19.35 .60	95.3 0.7	30.12 .10	12.5 0.4	29.46 .70	74.8 -0.5	19.47 .10	10.4 0.7
15.2	18.77 -.55	94.2 -1.3	30.03 -.08	12.9 -0.4	28.78 -.66	74.0 -1.1	19.38 -.08	11.1 -0.7
25.1	18.24 .49	92.7 1.8	29.97 .05	13.2 0.3	28.15 .59	72.6 1.6	19.31 .06	11.9 0.7
35.1	17.79 -.42	90.5 -2.4	29.93 -.02	13.4 -0.2	27.60 -.52	70.7 -2.2	19.26 -.04	12.6 -0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Gruis.		*θ* Aquarii.		*π* Aquarii.		*η* Aquarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 22 1	° ′ −47 28	h m 22 11	° ′ − 8 18	h m 22 19	° ′ + 0 49	h m 22 29	° ′ − 0 39
	s	″	s	″	s	″	s	″
Jan. 0.1	27.79 −.09	63.2 +1.3	9.92 −.05	67.8 −0.5	47.44 −.06	56.7 −0.8	50.21 −.07	75.8 −0.7
10.1	27.72 .05	61.7 1.6	9.88 −.02	68.2 0.4	47.39 .04	56.0 0.8	50.15 .04	76.6 0.7
20.1	27.69 −.01	60.0 1.9	9.87 .00	68.6 0.3	47.36 −.02	55.2 0.7	50.12 −.02	77.3 0.6
30.1	27.70 +.04	58.0 2.1	9.88 +.02	68.8 −0.2	47.36 +.01	54.5 0.6	50.11 .00	77.9 0.5
Feb. 9.0	27.76 .08	55.7 2.3	9.92 .05	68.9 0.0	47.39 .04	53.9 0.5	50.13 +.03	78.4 0.4
19.0	27.87 +.13	53.3 +2.4	9.99 +.08	68.8 +0.2	47.45 +.07	53.4 −0.3	50.18 +.06	78.7 −0.2
Mar. 1.0	28.02 .17	50.8 2.5	10.09 .12	68.5 0.4	47.53 .10	53.2 −0.1	50.25 .09	78.8 0.0
11.0	28.22 .22	48.2 2.6	10.22 .15	68.0 0.6	47.65 .14	53.2 +0.1	50.36 .12	78.8 +0.2
20.9	28.46 .26	45.6 2.6	10.39 .18	67.2 0.8	47.80 .17	53.4 0.3	50.51 .16	78.5 0.4
30.9	28.74 .30	43.0 2.5	10.59 .21	66.3 1.1	47.99 .20	53.9 0.6	50.69 .19	77.9 0.7
Apr. 9.9	29.06 +.34	40.5 +2.4	10.81 +.24	65.1 +1.3	48.21 +.23	54.7 +0.9	50.90 +.22	77.0 +1.0
19.8	29.42 .37	38.2 2.3	11.07 .27	63.7 1.5	48.46 .26	55.7 1.2	51.14 .25	75.9 1.2
29.8	29.81 .40	36.0 2.1	11.35 .29	62.1 1.7	48.73 .28	57.0 1.4	51.41 .28	74.5 1.5
May 9.8	30.22 .42	34.0 1.8	11.65 .31	60.4 1.8	49.02 .30	58.6 1.6	51.70 .30	72.9 1.7
19.8	30.65 .43	32.3 1.5	11.97 .32	58.6 1.8	49.33 .31	60.3 1.8	52.01 .31	71.1 1.9
29.7	31.09 +.44	30.9 +1.2	12.29 +.33	56.7 +1.9	49.65 +.32	62.3 +1.9	52.33 +.32	69.2 +2.0
June 8.7	31.53 .43	29.8 0.9	12.62 .32	54.8 1.9	49.97 .32	64.3 2.0	52.65 .32	67.2 2.0
18.7	31.96 .41	29.1 0.5	12.94 .31	53.0 1.8	50.29 .31	66.3 2.0	52.96 .31	65.2 2.0
28.7	32.37 .39	28.8 +0.1	13.24 .29	51.2 1.7	50.59 .29	68.3 2.0	53.27 .29	63.2 2.0
July 8.6	32.74 .35	28.9 −0.3	13.51 .26	49.6 1.5	50.86 .26	70.3 1.9	53.55 .27	61.2 1.9
18.6	33.07 +.30	29.4 −0.7	13.76 +.23	48.1 +1.3	51.11 +.23	72.2 +1.8	53.81 +.24	59.4 +1.8
28.6	33.35 .25	30.3 1.0	13.97 .19	46.9 1.1	51.32 .19	73.9 1.6	54.03 .20	57.8 1.6
Aug. 7.5	33.57 .19	31.4 1.3	14.14 .15	45.9 0.9	51.50 .15	75.4 1.4	54.21 .16	56.3 1.4
17.5	33.74 .13	32.9 1.5	14.27 .11	45.1 0.7	51.63 .11	76.7 1.2	54.35 .12	55.0 1.2
27.5	33.83 +.06	34.6 1.7	14.36 .06	44.5 0.4	51.72 .07	77.9 1.0	54.45 .08	54.0 0.9
Sept. 6.5	33.87 .00	36.4 −1.8	14.40 +.02	44.2 +0.2	51.76 +.03	78.7 +0.8	54.51 +.04	53.2 +0.7
16.4	33.84 −.06	38.3 1.9	14.40 −.02	44.1 0.0	51.77 −.01	79.4 0.6	54.52 .00	52.6 0.5
26.4	33.76 .11	40.1 1.8	14.37 .05	44.2 −0.2	51.74 .04	79.8 0.3	54.50 −.04	52.2 0.3
Oct. 6.4	33.63 .15	41.9 1.7	14.30 .08	44.4 0.3	51.68 .07	80.1 +0.1	54.45 .07	52.1 +0.1
16.4	33.46 .18	43.5 1.5	14.21 .10	44.7 0.4	51.59 .09	80.1 0.0	54.37 .09	52.1 −0.1
26.3	33.26 −.20	44.9 −1.2	14.10 −.11	45.2 −0.5	51.49 −.11	80.0 −0.2	54.28 −.10	52.3 −0.2
Nov. 5.3	33.05 .21	46.0 0.9	13.98 .12	45.7 0.5	51.38 .12	79.7 0.3	54.17 .11	52.6 0.4
15.3	32.84 .21	46.6 0.5	13.86 .12	46.2 0.6	51.26 .12	79.3 0.5	54.06 .11	53.0 0.5
25.2	32.63 .20	47.0 −0.1	13.74 .11	46.8 0.6	51.14 .11	78.8 0.6	53.94 .11	53.6 0.6
Dec. 5.2	32.43 .18	46.9 +0.3	13.63 .10	47.4 0.5	51.03 .10	78.2 0.7	53.83 .10	54.2 0.6
15.2	32.26 −.15	46.4 +0.7	13.54 −.08	47.9 −0.5	50.94 −.09	77.5 −0.7	53.74 −.09	54.8 −0.7
25.2	32.13 .12	45.5 1.1	13.46 .06	48.5 0.5	50.86 .07	76.8 0.8	53.65 .08	55.5 0.7
35.1	32.03 −.08	44.2 +1.4	13.41 −.04	48.9 −0.4	50.79 −.05	76.0 −0.8	53.59 −.06	56.2 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	226 Cephei (B.)		ζ Pegasi.		ι Cephei.		λ Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 22 30	° ′ +75 40	h m 22 36	° ′ +10 16	h m 22 45	° ′ +65 37	h m 22 47	° ′ − 8 8
	s	″	s	″	s	″	s	″
Jan. 0.2	18.94 −.74	40.3 −1.5	6.22 −.08	18.1 −1.1	49.24 −.40	85.3 −1.4	0.82 −.07	65.5 −0.5
10.1	18.25 .64	38.5 2.0	6.15 .06	17.0 1.1	48.86 .35	83.7 1.9	0.76 .05	66.0 0.4
20.1	17.66 .53	36.3 2.4	6.10 .03	15.9 1.1	48.53 .29	81.5 2.4	0.72 .03	66.3 0.3
30.1	17.19 .40	33.6 2.8	6.08 −.01	14.8 1.1	48.27 .22	79.0 2.7	0.70 −.01	66.5 −0.1
Feb. 9.1	16.86 .25	30.7 3.0	6.09 +.02	13.7 1.0	48.08 .14	76.1 2.9	0.70 +.02	66.5 0.0
19.0	16.69 −.09	27.5 −3.2	6.12 +.04	12.7 −0.9	47.98 −.05	73.1 −3.0	0.73 +.05	66.4 +0.2
Mar. 1.0	16.68 +.07	24.3 3.1	6.19 .08	11.9 0.7	47.97 +.04	70.1 3.0	0.79 .08	66.0 0.4
11.0	16.83 .24	21.2 3.0	6.29 .12	11.3 0.5	48.06 .14	67.1 2.9	0.89 .11	65.4 0.7
20.9	17.15 .38	18.4 2.7	6.42 .15	11.0 −0.2	48.25 .23	64.4 2.6	1.02 .15	64.7 0.9
30.9	17.62 .53	15.8 2.3	6.60 .19	11.0 +0.1	48.52 .32	61.9 2.2	1.18 .18	63.7 1.1
Apr. 9.9	18.22 +.66	13.7 −1.9	6.80 +.22	11.3 +0.4	48.89 +.40	59.9 −1.8	1.38 +.21	62.4 +1.3
19.9	18.94 .76	12.0 1.4	7.04 .25	12.0 0.8	49.33 .47	58.3 1.3	1.61 .24	60.9 1.5
29.8	19.75 .84	10.9 0.8	7.31 .28	13.0 1.1	49.83 .53	57.3 0.7	1.87 .27	59.3 1.7
May 9.8	20.63 .89	10.4 −0.2	7.60 .30	14.3 1.4	50.38 .57	56.9 −0.1	2.16 .29	57.5 1.8
19.8	21.54 .91	10.5 +0.4	7.91 .31	15.9 1.7	50.97 .59	57.0 +0.5	2.47 .31	55.6 1.9
29.8	22.45 +.90	11.2 +1.0	8.23 +.32	17.7 +1.9	51.56 +.60	57.8 +1.0	2.79 +.32	53.6 +2.0
June 8.7	23.35 .88	12.5 1.5	8.55 .32	19.7 2.1	52.16 .59	59.1 1.6	3.11 .33	51.6 2.0
18.7	24.21 .82	14.4 2.1	8.87 .31	21.9 2.2	52.73 .56	60.9 2.1	3.44 .32	49.6 1.9
28.7	24.99 .74	16.7 2.5	9.17 .29	24.1 2.2	53.27 .52	63.2 2.5	3.75 .30	47.8 1.8
July 8.6	25.68 .64	19.4 2.9	9.46 .27	26.4 2.3	53.76 .46	66.0 2.9	4.05 .28	46.0 1.7
18.6	26.27 +.53	22.6 +3.2	9.72 +.24	28.7 +2.2	54.19 +.39	69.1 +3.2	4.32 +.25	44.4 +1.5
28.6	26.74 .40	26.0 3.5	9.94 .20	30.8 2.1	54.55 .32	72.4 3.4	4.56 .22	43.1 1.3
Aug. 7.6	27.08 .27	29.6 3.7	10.12 .16	32.8 2.0	54.83 .24	76.0 3.6	4.76 .18	42.0 1.0
17.5	27.28 +.13	33.3 3.8	10.27 .12	34.7 1.8	55.03 .16	79.6 3.7	4.92 .14	41.1 0.8
27.5	27.34 .00	37.1 3.8	10.37 .08	36.4 1.6	55.14 +.07	83.4 3.7	5.04 .10	40.4 0.5
Sept. 6.5	27.27 −.14	40.9 +3.7	10.42 +.04	37.8 +1.4	55.17 −.01	87.1 +3.6	5.12 +.06	40.0 +0.3
16.5	27.06 .27	44.6 3.6	10.44 .00	39.1 1.1	55.12 .09	90.7 3.5	5.15 +.02	39.9 +0.1
26.4	26.73 .39	48.2 3.4	10.43 −.03	40.1 0.9	54.99 .17	94.1 3.3	5.15 −.02	39.9 −0.1
Oct. 6.4	26.28 .50	51.4 3.1	10.38 .06	40.8 0.6	54.78 .24	97.2 3.0	5.11 .05	40.2 0.3
16.4	25.73 .60	54.4 2.7	10.30 .08	41.3 0.4	54.51 .30	100.1 2.7	5.04 .08	40.6 0.4
26.3	25.08 −.69	56.9 +2.3	10.20 −.10	41.6 +0.2	54.19 −.35	102.6 +2.3	4.96 −.09	41.0 −0.5
Nov. 5.3	24.35 .75	59.0 1.8	10.10 .11	41.6 −0.1	53.81 .39	104.6 1.8	4.86 .10	41.6 0.6
15.3	23.57 .80	60.6 1.3	9.98 .12	41.5 0.3	53.41 .42	106.1 1.3	4.75 .11	42.2 0.6
25.3	22.75 .83	61.6 0.7	9.86 .12	41.1 0.5	52.97 .44	107.1 0.7	4.64 .11	42.9 0.6
Dec. 5.2	21.91 .83	62.0 +0.1	9.75 .11	40.5 0.7	52.53 .44	107.5 +0.1	4.53 .10	43.5 0.6
15.2	21.08 −.81	61.8 −0.5	9.64 −.10	39.8 −0.8	52.09 −.44	107.3 −0.5	4.43 −.09	44.1 −0.6
25.2	20.29 .77	61.0 1.1	9.55 .09	38.9 0.9	51.66 .42	106.6 1.1	4.34 .08	44.6 0.5
35.2	19.55 −.71	59.6 −1.7	9.47 −.07	37.9 −1.1	51.26 −.39	105.2 −1.6	4.26 −.06	45.0 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Piscis Australis. (*Fomalhaut.*)		α Pegasi. (*Markab.*)		ο Cephei.		θ Piscium.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 22 51	° ′ −30 11	h m 22 59	° ′ +14 37	h m 23 14	° ′ +67 31	h m 23 22	° ′ + 5 47
	s	″	s	″	s	″	s	″
Jan. 0.2	43.21 −.10	37.3 +0.3	24.60 −.09	44.2 −1.0	11.16 −.47	46.3 −1.0	31.36 −.09	23.8 −0.8
10.2	43.13 .07	36.8 0.6	24.52 .07	43.1 1.1	10.72 .42	45.0 1.5	31.27 .08	23.0 0.8
20.1	43.07 .04	36.1 0.8	24.45 .05	41.9 1.2	10.32 .37	43.2 2.0	31.20 .06	22.2 0.8
30.1	43.04 −.01	35.1 1.1	24.41 .03	40.7 1.2	9.98 .30	40.9 2.4	31.15 .04	21.4 0.8
Feb. 9.1	43.04 +.02	33.9 1.3	24.39 −.01	39.5 1.2	9.71 .22	38.3 2.7	31.11 −.02	20.6 0.7
19.0	43.07 +.05	32.5 +1.6	24.40 +.02	38.3 −1.1	9.54 −.13	35.5 −2.9	31.11 +.01	20.0 −0.6
Mar. 1.0	43.13 .08	30.8 1.8	24.44 .06	37.3 0.9	9.46 −.03	32.5 3.0	31.13 .04	19.6 0.4
11.0	43.24 .12	28.9 2.0	24.51 .09	36.5 0.7	9.48 +.07	29.5 2.9	31.18 .07	19.3 −0.2
20.9	43.38 .15	26.9 2.1	24.63 .13	35.9 0.4	9.60 .18	26.6 2.7	31.27 .10	19.2 +0.1
30.9	43.55 .19	24.7 2.2	24.78 .17	35.7 −0.1	9.84 .28	24.0 2.4	31.40 .14	19.5 0.4
Apr. 9.9	43.77 +.23	22.4 +2.3	24.97 +.21	35.7 +0.2	10.17 +.37	21.7 −2.0	31.56 +.18	20.0 +0.7
19.9	44.02 .27	20.1 2.3	25.19 .24	36.1 0.6	10.59 .46	19.9 1.6	31.76 .22	20.8 0.9
29.8	44.30 .30	17.8 2.3	25.45 .27	36.9 1.0	11.09 .53	18.6 1.1	32.00 .25	21.9 1.2
May 9.8	44.62 .33	15.5 2.2	25.73 .29	38.0 1.3	11.66 .58	17.8 −0.5	32.27 .28	23.3 1.5
19.8	44.95 .35	13.3 2.1	26.03 .31	39.4 1.6	12.26 .62	17.5 +0.1	32.56 .30	24.9 1.7
29.8	45.31 +.36	11.3 +1.9	26.35 +.32	41.2 +1.8	12.90 +.64	17.9 +0.6	32.87 +.31	26.7 +1.9
June 8.7	45.67 .36	9.4 1.7	26.68 .33	43.1 2.0	13.54 .64	18.8 1.2	33.19 .32	28.7 2.0
18.7	46.03 .36	7.8 1.5	27.01 .32	45.2 2.2	14.18 .62	20.3 1.7	33.51 .32	30.8 2.1
28.7	46.38 .34	6.5 1.2	27.32 .31	47.5 2.3	14.79 .59	22.3 2.2	33.83 .31	33.0 2.1
July 8.7	46.72 .32	5.5 0.8	27.62 .29	49.8 2.4	15.35 .54	24.7 2.6	34.14 .29	35.1 2.1
18.6	47.03 +.29	4.8 +0.5	27.89 +.26	52.2 +2.4	15.86 +.48	27.5 +3.0	34.42 +.27	37.2 +2.0
28.6	47.30 .25	4.5 +0.2	28.13 .22	54.5 2.3	16.30 .40	30.7 3.3	34.68 .24	39.2 1.9
Aug. 7.6	47.53 .21	4.5 −0.2	28.34 .18	56.7 2.2	16.67 .32	34.1 3.5	34.90 .21	41.0 1.8
17.6	47.72 .16	4.8 0.5	28.50 .14	58.8 2.0	16.96 .24	37.7 3.6	35.09 .17	42.7 1.6
27.5	47.86 .12	5.5 0.8	28.63 .10	60.8 1.8	17.15 .15	41.4 3.7	35.23 .13	44.2 1.3
Sept. 6.5	47.95 +.07	6.4 −1.0	28.71 +.06	62.5 +1.6	17.26 +.06	45.2 +3.7	35.34 +.08	45.5 +1.1
16.5	47.99 +.02	7.5 1.2	28.75 +.02	64.0 1.4	17.28 −.02	48.9 3.6	35.41 .04	46.5 0.9
26.4	47.99 −.02	8.8 1.3	28.75 −.01	65.3 1.2	17.21 .11	52.5 3.5	35.44 +.01	47.2 0.7
Oct. 6.4	47.94 .06	10.1 1.4	28.72 .04	66.3 0.9	17.06 .19	55.9 3.3	35.43 −.02	47.8 0.5
16.4	47.87 .09	11.5 1.3	28.67 .07	67.1 0.7	16.84 .26	59.0 3.0	35.40 .05	48.1 +0.2
26.4	47.76 −.11	12.8 −1.3	28.58 −.09	67.6 +0.4	16.55 −.32	61.8 +2.6	35.34 −.07	48.3 0.0
Nov. 5.3	47.64 .13	14.0 1.1	28.48 .10	67.9 +0.2	16.20 .38	64.2 2.2	35.26 .08	48.2 −0.1
15.3	47.50 .14	15.0 0.9	28.38 .11	67.9 −0.1	15.80 .42	66.1 1.7	35.17 .09	48.0 0.3
25.3	47.36 .14	15.9 0.7	28.26 .12	67.7 0.3	15.36 .45	67.5 1.1	35.07 .10	47.6 0.4
Dec. 5.3	47.22 .13	16.5 0.4	28.15 .11	67.3 0.5	14.90 .47	68.3 +0.5	34.97 .10	47.1 0.5
15.2	47.10 −.12	16.8 −0.2	28.03 −.11	66.6 −0.7	14.42 −.48	68.6 0.0	34.86 −.10	46.5 −0.6
25.2	46.98 .10	16.8 +0.1	27.93 .10	65.8 0.9	13.94 .47	68.2 −0.6	34.76 .10	45.8 0.7
35.2	46.89 −.09	16.5 +0.4	27.84 −.08	64.8 −1.1	13.48 −.45	67.3 −1.2	34.67 −.09	45.1 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Piscium.		γ Cephei.		Groombridge 4163.		ω Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 23 34	+ 5° 2′	h m 23 34	+77° 1′	h m 23 49	+73° 46′	h m 23 53	+ 6° 16′
	s	″	s	″	s	″	s	″
Jan. 0.2	25.83 −.10	42.7 −0.8	53.06 −.89	80.6 −0.6	34.62 −.70	68.2 −0.4	48.13 −.10	12.1 −0.7
10.2	25.74 .08	41.9 0.8	52.20 .83	79.7 1.2	33.94 .66	67.5 1.0	48.04 .09	11.4 0.7
20.2	25.67 .07	41.1 0.8	51.40 .75	78.3 1.7	33.31 .61	66.2 1.6	47.95 .08	10.6 0.7
30.1	25.61 .05	40.4 0.7	50.69 .65	76.3 2.2	32.73 .53	64.4 2.1	47.87 .07	9.9 0.7
Feb. 9.1	25.56 −.03	39.7 0.6	50.11 .51	73.9 2.6	32.25 .43	62.1 2.5	47.81 .05	9.2 0.6
19.1	25.55 .00	39.2 −0.5	49.67 −.36	71.2 −2.9	31.87 −.31	59.5 −2.8	47.78 −.02	8.6 −0.5
Mar. 1.1	25.56 +.03	38.7 0.3	49.39 .19	68.2 3.0	31.62 .18	56.6 3.0	47.77 +.01	8.1 0.4
11.0	25.60 .06	38.5 −0.1	49.29 −.01	65.1 3.0	31.51 −.04	53.6 3.0	47.79 .04	7.9 −0.2
21.0	25.68 .09	38.5 +0.1	49.38 +.18	62.1 2.9	31.55 +.11	50.6 2.9	47.85 .08	7.8 +0.1
30.9	25.80 .13	38.8 0.4	49.64 .35	59.2 2.7	31.73 .25	47.7 2.7	47.95 .12	8.0 0.3
Apr. 9.9	25.95 +.17	39.3 +0.7	50.09 +.59	56.6 −2.4	32.05 +.39	45.1 −2.4	48.08 +.16	8.5 +0.6
19.9	26.14 .21	40.2 1.0	50.69 .67	54.4 2.0	32.52 .52	42.8 2.0	48.26 .20	9.3 0.9
29.9	26.37 .24	41.3 1.3	51.43 .80	52.6 1.5	33.10 .63	41.0 1.6	48.47 .23	10.3 1.2
May 9.9	26.63 .27	42.7 1.5	52.28 .90	51.3 1.0	33.78 .72	39.6 1.1	48.72 .26	11.6 1.4
19.8	26.92 .28	44.3 1.7	53.22 .97	50.6 −0.4	34.53 .79	38.8 −0.5	49.00 .28	13.2 1.6
29.8	27.22 +.31	46.1 +1.9	54.22 +1.01	50.4 +0.1	35.35 +.83	38.6 0.0	49.30 +.31	14.9 +1.8
June 8.8	27.54 .32	48.1 2.0	55.24 1.02	50.9 0.7	36.20 .86	38.9 +0.6	49.62 .32	16.9 2.0
18.7	27.87 .32	50.1 2.1	56.26 1.00	51.9 1.3	37.05 .85	39.8 1.2	49.94 .32	18.9 2.1
28.7	28.19 .31	52.3 2.1	57.25 .96	53.5 1.8	37.89 .82	41.3 1.7	50.26 .32	21.0 2.1
July 8.7	28.50 .30	54.4 2.1	58.18 .89	55.6 2.3	38.68 .77	43.2 2.2	50.58 .31	23.2 2.1
18.7	28.79 +.28	56.5 +2.0	59.08 +.80	58.1 +2.7	39.42 +.70	45.6 +2.6	50.88 +.29	25.3 +2.0
28.6	29.06 .25	58.4 1.9	59.78 .69	61.0 3.1	40.09 .62	48.4 3.0	51.15 .26	27.3 1.9
Aug. 7.6	29.29 .22	60.2 1.7	60.42 .57	64.2 3.4	40.67 .53	51.6 3.3	51.40 .23	29.2 1.8
17.6	29.49 .18	61.8 1.5	60.93 .44	67.7 3.6	41.15 .43	55.0 3.5	51.61 .20	30.9 1.6
27.6	29.65 .14	63.3 1.3	61.30 .30	71.4 3.7	41.52 .32	58.6 3.7	51.79 .16	32.4 1.4
Sept. 6.5	29.77 +.10	64.5 +1.1	61.58 +.16	75.2 +3.8	41.77 +.20	62.3 +3.8	51.93 +.12	33.7 +1.2
16.5	29.85 .06	65.5 0.9	61.61 +.01	79.1 3.8	41.91 +.06	66.1 3.8	52.03 .08	34.7 0.9
26.5	29.89 +.02	66.2 0.6	61.55 −.13	82.9 3.7	41.94 −.08	69.9 3.7	52.09 .04	35.5 0.7
Oct. 6.4	29.90 −.01	66.7 0.4	61.35 .27	86.6 3.6	41.85 .14	73.6 3.6	52.12 +.01	36.1 0.5
16.4	29.88 .03	67.0 +0.2	61.01 .40	90.1 3.4	41.65 .26	77.1 3.4	52.11 −.02	36.5 0.3
26.4	29.83 −.06	67.1 0.0	60.55 −.52	93.3 +3.1	41.35 −.35	80.3 +3.1	52.08 −.04	36.7 +0.1
Nov. 5.4	29.76 .08	67.0 −0.2	59.97 .63	96.2 2.7	40.94 .44	83.2 2.7	52.03 .06	36.7 −0.1
15.3	29.68 .09	66.7 0.3	59.29 .72	98.6 2.2	40.46 .52	85.7 2.2	51.96 .08	36.5 0.3
25.3	29.59 .10	66.3 0.4	58.52 .80	100.5 1.7	39.90 .59	87.7 1.7	51.87 .09	36.2 0.4
Dec. 5.3	29.49 .10	65.8 0.5	57.69 .86	101.9 1.1	39.28 .64	89.2 1.2	51.78 .10	35.7 0.5
15.3	29.39 −.10	65.2 −0.6	56.81 −.88	102.7 +0.5	38.61 −.67	90.1 +0.6	51.68 −.10	35.1 −0.6
25.2	29.29 .10	64.5 0.7	55.92 .88	102.8 −0.1	37.93 .68	90.4 0.0	51.58 .10	34.5 0.7
35.2	29.19 −.09	63.8 −0.8	55.06 −.87	102.3 −0.8	37.24 −.68	90.1 −0.6	51.48 −.10	33.8 −0.7

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Cassiop.	22 Androm.	σ Androm.	ι Ceti.	6 Urs. Min., S. P.	44 Piscium.	π Androm.	ο Cassiop.
	31° 26′	44° 31′	53° 48′	99° 25′	358° 18′	88° 39′	56° 52′	42° 18′
	h m 0 3	h m 0 4	h m 0 12	h m 0 13	h m 0 13	h m 0 19	h m 0 31	h m 0 38
	s	s	s	s	s	s	s	s
(Dec. 30.2)	26.41 − .33	44.29 − .22	43.18 − .17	57.76 − .10	100.90 + 7.69	54.35 − .12	9.00 − .18	44.61 − .23
Jan. 9.2	26.09 .30	44.08 .20	43.02 .15	57.67 .09	108.57 7.56	54.23 .10	8.83 .16	44.38 .22
19.2	25.80 .28	43.90 .18	42.88 .14	57.58 .08	116.00 7.17	54.15 .08	8.68 .15	44.16 .21
29.1	25.53 − .26	43.73 − .16	42.74 − .14	57.51 − .07	122.91 + 6.53	54.08 − .07	8.54 − .14	43.96 − .20
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Aug. 26.6	31.03 + .24	48.28 + .18	46.92 + .19	61.27 + .16	63.80 − 3.11	57.78 + .16	12.50 + .20	48.36 + .25
Sept. 5.5	31.24 .17	48.45 .15	47.09 .15	61.42 .14	61.18 2.13	57.93 .14	12.69 .17	48.59 .21
15.5	31.39 .11	48.58 .10	47.23 .10	61.55 .10	59.54 1.12	58.07 .11	12.85 .13	48.78 .16
25.5	31.47 + .05	48.66 .06	47.30 .06	61.63 .06	58.95 − 0.04	58.15 .07	12.95 .09	48.92 .11
Oct. 5.5	31.49 − .01	48.69 + .01	47.35 + .03	61.69 + .03	59.46 + 1.06	58.21 .04	13.03 .05	49.00 .06
15.4	31.46 − .07	48.68 − .03	47.37 .00	61.70 .00	61.07 + 2.17	58.24 + .01	13.07 + .02	49.05 + .01
25.4	31.37 .12	48.64 .07	47.35 − .03	61.69 − .02	63.79 3.25	58.24 − .02	13.07 − .02	49.05 − .03
Nov. 4.4	31.22 .17	48.54 .11	47.29 .07	61.65 .05	67.57 4.28	58.20 .04	13.04 .05	49.00 .07
14.4	31.04 .21	48.42 .13	47.20 .10	61.59 .07	72.35 5.25	58.15 .06	12.98 .08	48.91 .10
24.3	30.80 .24	48.28 .15	47.09 .12	61.50 .09	78.04 6.09	58.08 .08	12.89 .10	48.80 .13
Dec. 4.3	30.55 − .27	48.12 − .17	46.97 − .13	61.41 − .09	84.51 + 6.77	57.99 − .09	12.79 − .11	48.65 − .15
14.3	30.26 .29	47.94 .19	46.83 .14	61.32 .10	91.59 7.29	57.90 .09	12.67 .12	48.49 .17
24.2	29.96 .30	47.75 .20	46.68 .15	61.21 .11	99.08 7.56	57.81 .10	12.54 .14	48.30 .19
34.2	29.66 − .31	47.55 − .21	46.53 − .16	61.11 − .10	106.71 + 7.70	57.71 − .11	12.39 − .15	48.10 − .20

Mean Solar Date.	δ Piscium.	γ Cassiop.	μ Androm.	43 Cephei.	κ Tucanae.	f Piscium.	κ Octantis, S. P.	υ Androm.
	83° 0′	29° 52′	52° 5′	4° 19′	159° 27′	86° 57′	184° 46′	49° 8′
	h m 0 43	h m 0 50	h m 0 50	h m 0 53	h m 1 12	h m 1 12	h m 1 23	h m 1 30
	s	s	s	s	s	s	s	s
(Dec. 30.2)	7.22 − .12	13.71 − .33	47.93 − .15	63.92 − 2.83	10.04 − .55	16.35 − .12	31.78 + 2.86	30.44 − .16
Jan. 9.2	7.11 .11	13.38 .34	47.77 .16	61.10 2.81	9.50 .53	16.23 .11	34.65 2.87	30.27 .18
19.2	7.00 .10	13.05 .33	47.60 .17	58.30 2.77	8.98 .51	16.12 .11	37.52 2.80	30.09 .20
29.1	6.90 − .09	12.74 − .32	47.43 − .18	55.57 − 2.71	8.47 − .50	16.01 − .11	40.26 + 2.68	29.88 − .22
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 5.6	10.63 + .17	18.23 + .27	51.60 + .20	80.58 + 1.52	14.25 + .42	19.48 + .21	28.38 − 1.55	33.81 + .27
15.6	10.78 .13	18.46 .21	51.78 .16	81.90 1.12	14.62 .32	19.67 .16	27.06 1.09	34.06 .22
25.5	10.90 .09	18.66 .15	51.92 .12	82.81 .71	14.89 .21	19.81 .12	26.20 .65	34.26 .18
Oct. 5.5	10.98 .06	18.77 .09	52.02 .08	83.31 + .29	15.04 + .10	19.92 .09	25.76 − .18	34.42 .14
15.5	11.03 + .03	18.84 + .03	52.08 + .04	83.38 − .14	15.08 − .01	20.00 .06	25.83 + .32	34.53 .10
25.5	11.05 .00	18.84 − .03	52.11 .00	83.01 − .58	15.01 − .12	20.05 + .03	26.40 + .82	34.61 + .06
Nov. 4.4	11.03 − .02	18.77 .09	52.09 − .03	82.21 1.01	14.84 .22	20.06 .00	27.47 1.32	34.65 + .02
14.4	11.01 .04	18.65 .14	52.05 .06	80.98 1.42	14.57 .31	20.05 − .02	29.02 1.77	34.65 − .02
24.4	10.96 .06	18.48 .19	51.97 .09	79.36 1.80	14.22 .39	20.02 .04	30.98 2.15	34.62 .05
Dec. 4.3	10.88 .08	18.27 .23	51.87 .11	77.37 2.14	13.79 .45	19.97 .06	33.32 2.48	34.55 .08
14.3	10.80 − .09	18.01 − .27	51.75 − .13	75.06 − 2.43	13.31 − .49	19.91 − .08	35.93 + 2.70	34.45 − .11
24.3	10.70 .10	17.72 .30	51.61 .15	72.50 2.64	12.80 .52	19.81 .10	38.72 2.84	34.32 .14
34.3	10.60 − .11	17.41 − .32	51.46 − .16	69.79 − 2.78	12.27 − .54	19.72 − .10	41.61 + 2.93	34.17 − .17

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Piscium.	ν Piscium.	ζ Ceti.	γ Androm.	β Trianguli.	4 Urs. Min., S. P.	γ Trianguli.	67 Ceti.
	78° 24′	85° 3′	100° 52′	48° 11′	55° 31′	348° 3′	56° 39′	96° 55′
	1h 31m	1h 35m	1h 46m	1h 57m	2h 3m	2h 9m	2h 10m	2h 11m
	s	s	s	s	s	s	s	s
(Dec.30.3)	25.22 − .12	51.54 − .10	10.68 − .10	19.42 − .16	10.28 − .13	15.38 +1.04	56.90 − .12	38.78 − .09
Jan. 9.3	25.10 .12	51.43 .11	10.57 .11	19.26 .18	10.14 .14	16.45 1.10	56.77 .14	38.68 .11
19.2	24.99 .12	51.32 .12	10.45 .12	19.08 .19	9.99 .16	17.58 1.14	56.62 .15	38.57 .12
29.2	24.87 .12	51.20 .12	10.32 .13	18.89 .20	9.83 .17	18.73 1.13	56.46 .16	38.44 .13
Feb. 8.2	24.76 .12	51.09 .11	10.19 .12	18.69 .18	9.66 .16	19.84 1.10	56.30 .17	38.31 .14
18.2	24.64 − .12	50.99 − .10	10.07 − .11	18.52 − .16	9.50 − .15	20.92 +1.04	56.13 − .18	38.18 − .13
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept.25.6	28.60 + .16	54.85 + .15	13.81 + .16	23.11 + .22	13.77 + .21	12.98 − .55	60.30 + .21	41.74 + .18
Oct. 5.5	28.74 .12	54.98 .12	13.96 .13	23.31 .18	13.96 .17	12.50 .41	60.50 .18	41.91 .15
15.5	28.83 .08	55.08 .09	14.06 .10	23.47 .14	14.12 .13	12.16 .25	60.67 .15	42.04 .12
25.5	28.90 + .05	55.15 + .06	14.15 + .06	23.58 + .10	14.23 + .10	12.00 − .08	60.80 + .11	42.14 + .08
Nov. 4.5	28.93 + .02	55.19 + .03	14.19 + .03	23.65 .06	14.32 .07	12.00 + .10	60.88 .07	42.21 .05
14.4	28.95 .00	55.21 .00	14.21 .00	23.69 + .02	14.37 + .03	12.20 .30	60.95 .04	42.25 .03
24.4	28.93 − .03	55.20 − .03	14.20 − .02	23.70 − .02	14.38 − .01	12.60 .48	60.97 + .01	42.27 + .01
Dec. 4.4	28.90 .05	55.16 .06	14.17 .05	23.66 .06	14.36 .04	13.16 .64	60.96 − .03	42.26 − .02
14.3	28.84 − .07	55.11 − .07	14.12 − .07	23.58 − .10	14.31 − .07	13.88 + .80	60.92 − .07	42.22 − .05
24.3	28.75 .09	55.03 .09	14.03 .09	23.47 .13	14.22 .10	14.76 .94	60.83 .10	42.15 .08
34.3	28.66 − .10	54.93 − .11	13.93 − .11	23.33 − .16	14.10 − .13	15.76 +1.06	60.72 − .12	42.06 − .10

Mean Solar Date.	δ Hydri.	δ Ceti.	μ Hydri.	θ Persei.	σ Arietis.	47 Cephei.	ε Arietis.	β Persei. (*Algol.*)
	159° 9′	90° 8′	169° 35′	41° 13′	75° 22′	11° 1′	69° 5′	49° 27′
	2h 19m	2h 33m	2h 33m	2h 36m	2h 45m	2h 51m	2h 53m	3h 1m
	s	s	s	s	s	s	s	s
(Dec.30.3)	53.28 − .51	60.00 − .09	62.20 −1.14	53.35 − .16	35.14 − .08	52.76 − .74	5.65 − .09	12.40 − .09
Jan. 9.3	52.75 .54	59.90 .10	61.04 1.19	53.18 .19	35.05 .10	51.97 .84	5.55 .11	12.29 .13
19.3	52.19 .56	59.80 .12	59.82 1.22	52.98 .21	34.93 .12	51.08 .95	5.44 .12	12.14 .16
29.2	51.62 .57	59.67 .13	58.58 1.23	52.76 .23	34.81 .13	50.08 1.01	5.31 .13	11.96 .18
Feb. 8.2	51.06 .56	59.54 .14	57.36 1.22	52.53 .24	34.67 .14	49.06 1.03	5.17 .14	11.77 .19
18.2	50.51 − .54	59.40 − .15	56.15 −1.21	52.29 − .25	34.53 − .14	48.02 −1.05	5.02 − .15	11.57 − .20
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept.25.6	55.77 + .37	62.80 + .20	63.73 + .71	56.98 + .29	38.01 + .22	59.55 + .92	8.55 + .21	15.61 + .27
Oct. 5.6	56.09 .27	62.99 .17	64.34 .52	57.25 .25	38.22 .19	60.41 .80	8.76 .20	15.87 .25
15.5	56.31 .16	63.15 .14	64.76 .30	57.49 .21	38.40 .16	61.15 .66	8.96 .18	16.11 .22
25.5	56.41 + .06	63.28 + .11	64.94 + .07	57.68 + .17	38.55 + .13	61.74 + .50	9.14 + .15	16.32 + .18
Nov. 4.5	56.42 − .05	63.37 .08	64.90 − .15	57.83 .12	38.66 .10	62.16 .31	9.27 .11	16.49 .14
14.5	56.30 .16	63.44 .05	64.64 .38	57.92 .07	38.75 .07	62.37 + .13	9.36 .06	16.61 .10
24.4	56.08 .26	63.48 + .02	64.16 .57	57.98 + .03	38.81 .04	62.43 − .04	9.43 .05	16.70 .06
Dec. 4.4	55.78 .35	63.49 − .01	63.50 .75	57.98 − .01	38.83 + .01	62.29 .24	9.47 + .02	16.74 + .02
14.4	55.39 − .42	63.47 − .03	62.65 − .93	57.95 − .07	38.83 − .02	61.95 − .45	9.47 − .01	16.74 − .02
24.4	54.94 .48	63.43 .06	61.64 1.06	57.84 .12	38.80 .05	61.42 .61	9.44 .04	16.70 .07
34.3	54.43 − .53	63.35 − .09	60.53 −1.16	57.71 − .15	38.73 − .08	60.74 − .75	9.38 − .07	16.60 − .12

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ρ Octantis. S. P	ι Hydri.	*f* Tauri.	γ Camelop.	γ Hydri.	ε Persei.	A¹ Tauri.	ο Persei.
	185° 54′ h m 3 18	167° 47′ h m 3 18	77° 26′ h m 3 24	19° 0′ h m 3 39	164° 34′ h m 3 48	50° 18′ h m 3 50	68° 13′ h m 3 58	42° 34′ h m 4 0
	s	s	s	s	s	s	s	s
(Dec.30.4)	26.03 +2.21	43.76 − .87	58.15 − .05	4.88 − .28	58.80 − .60	40.71 − .06	22.55 − .03	54.09 − .05
Jan. 9.3	28.30 2.33	42.84 .96	58.08 .08	4.56 .37	58.14 .69	40.63 .10	22.50 .07	54.01 .10
19.3	30.69 2.45	41.83 1.03	57.98 .11	4.15 .45	57.41 .77	40.51 .14	22.41 .10	53.88 .15
29.3	33.20 2.51	40.77 1.07	57.86 .13	3.67 .51	56.59 .84	40.36 .17	22.30 .13	53.71 .19
Feb. 8.3	35.71 2.51	39.68 1.08	57.73 .14	3.13 .55	55.73 .88	40.18 .19	22.16 .15	53.50 .22
18.2	38.21 +2.46	38.60 −1.07	57.58 − .15	2.56 − .57	54.83 − .90	39.98 − .20	22.01 − .16	53.27 − .24
28.2	40.62 +2.36	37.53 −1.06	57.43 − .16	1.99 − .58	53.93 − .88	39.77 − .21	21.84 − .18	53.02 − .26
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 5.6	34.36 −1.06	43.62 + .63	60.92 + .23	9.74 + .63	57.85 + .59	43.80 + .32	25.25 + .26	57.31 + .34
15.6	33.47 .71	44.16 .45	61.14 .20	10.33 .55	58.38 .47	44.10 .28	25.50 .24	57.64 .31
25.5	32.95 − .32	44.52 + .26	61.32 + .17	10.84 + .46	58.79 + .34	44.35 + .24	25.73 + .22	57.95 + .28
Nov. 4.5	32.84 + .12	44.68 + .07	61.48 .15	11.26 .37	59.06 .20	44.58 .20	25.93 .19	58.21 .24
14.5	33.20 .54	44.66 − .12	61.62 .12	11.58 .27	59.18 + .05	44.77 .17	26.11 .16	58.44 .20
24.5	33.95 .96	44.45 .30	61.71 .08	11.80 .16	59.16 − .10	44.93 .12	26.25 .12	58.62 .15
Dec. 4.4	35.12 1.36	44.06 .48	61.77 .04	11.90 + .05	58.99 .25	45.03 .08	26.34 .08	58.74 .10
14.4	36.67 +1.70	43.49 − .64	61.80 + .01	11.90 − .07	58.67 − .40	45.09 + .03	26.41 + .05	58.82 + .05
24.4	38.53 1.99	42.77 .79	61.80 − .02	11.77 .19	58.19 .53	45.11 − .01	26.44 + .01	58.84 .00
34.4	40.65 +2.25	41.92 − .92	61.76 − .06	11.52 − .31	57.61 − .63	45.08 − .05	26.43 − .03	58.82 − .04

Mean Solar Date.	ο¹ Eridani.	η Urs. Min., S. P.	δ Mensæ.	*m* Persei.	τ Tauri.	*i* Tauri.	ζ Aurigæ.	β Eridani.
	97° 7′ h m 4 6	346° 0′ h m 4 20	170° 28′ h m 4 25	47° 10′ h m 4 25	67° 15′ h m 4 35	71° 21′ h m 4 45	49° 5′ h m 4 54	95° 14′ h m 5 2
	s	s	s	s	s	s	s	s
(Dec.30.4)	39.11 − .03	34.50 + .46	22.11 − .90	53.79 − .02	49.89 .00	7.44 + .02	60.64 + .02	36.09 + .01
Jan. 9.4	39.06 .07	35.04 .62	21.12 1.08	53.75 .06	49.87 − .04	7.44 − .03	60.64 − .03	36.08 − .03
19.4	38.97 .10	35.74 .76	19.95 1.24	53.66 .11	49.82 .08	7.39 .07	60.59 .08	36.04 .07
29.3	38.87 .12	36.55 .85	18.63 1.36	53.52 .16	49.71 .11	7.30 .10	60.47 .13	35.94 .10
Feb. 8.3	38.73 .14	37.43 .91	17.23 1.43	53.35 .19	49.59 .14	7.18 .13	60.32 .17	35.84 .12
18.3	38.59 − .16	38.37 + .95	15.76 −1.48	53.14 − .21	49.44 − .16	7.04 − .15	60.13 − .20	35.70 − .15
28.3	38.42 .17	39.33 .94	14.27 1.48	52.93 .22	49.27 .17	6.88 .17	59.92 .21	35.54 .17
Mar. 10.2	38.26 − .16	40.25 + .90	12.79 −1.47	52.71 − .23	49.10 − .17	6.71 − .17	59.71 − .22	35.37 − .18
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 15.6	41.52 + .22	33.82 − .73	17.69 + .87	57.04 + .31	52.61 + .28	10.03 + .26	63.63 + .34	38.14 + .25
25.6	41.73 + .20	33.15 − .60	18.46 + .67	57.34 + .29	52.88 + .25	10.29 + .25	63.96 + .32	38.38 + .24
Nov. 4.6	41.91 .17	32.61 .47	19.03 .45	57.63 .26	53.12 .22	10.54 .23	64.27 .30	38.61 .22
14.5	42.07 .14	32.22 .31	19.36 + .21	57.87 .22	53.33 .19	10.76 .20	64.54 .25	38.81 .20
24.5	42.20 .11	31.99 − .14	19.45 − .04	58.08 .18	53.51 .16	10.94 .17	64.78 .22	39.00 .17
Dec. 4.5	42.28 .07	31.94 + .03	19.28 .30	58.24 .13	53.66 .12	11.09 .13	64.97 .17	39.15 .13
14.5	42.33 + .03	32.06 + .21	18.85 − .54	58.33 + .08	53.75 + .08	1 .20 + .08	65.12 + .12	39.25 + .09
24.4	42.35 .00	32.35 .38	18.19 .78	58.39 + .03	53.81 + .04	11.27 .05	65.20 .07	39.32 .05
35.4	42.33 − .04	32.82 + .55	17.31 − .97	58.40 − .03	53.83 − .01	11.30 + .01	65.25 + .03	39.35 + .01

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Orionis.	χ Aurigæ.	Groombr. 944.	κ Orionis.	ν Aurigæ.	δ Doradus.	β Aurigæ.	θ Aurigæ.
	96° 58′	57° 53′	4° 51′	99° 42′	50° 53′	155° 47′	45° 4′	52° 48′
	h m 5 12	h m 5 25	h m 5 27	h m 5 42	h m 5 44	h m 5 44	h m 5 51	h m 5 52
	s	s	s	s	s	s	s	s
(Dec.30.5)	25.40 + .02	46.66 + .06	55.41 − .20	41.69 + .05	5.29 + .09	38.35 − .14	41.88 + .09	26.45 + .10
Jan. 9.4	25.40 − .02	46.70 + .01	54.98 .65	41.72 .00	5.35 + .03	38.16 .23	41.95 + .03	26.52 + .04
19.4	25.37 .06	46.69 − .04	54.08 1.14	41.70 − .04	5.35 − .03	37.88 .32	41.95 − .03	26.53 − .02
29.4	25.29 .10	46.63 .09	52.72 1.56	41.64 .08	5.29 .08	37.52 .40	41.88 .09	26.48 .07
Feb. 8.3	25.16 .13	46.51 .13	50.97 1.91	41.53 .11	5.18 .13	37.08 .47	41.77 .14	26.39 .12
18.3	25.03 − .14	46.36 − .16	48.91 −2.16	41.40 − .14	5.03 − .17	36.58 − .52	41.60 − .18	26.23 − .16
28.3	24.87 .16	46.19 .18	46.65 2.32	41.25 .16	4.84 .20	36.05 .55	41.41 .21	26.07 .19
Mar. 10.3	24.70 .17	46.00 .20	44.28 2.38	41.08 .17	4.64 .21	35.48 .57	41.18 .23	25.87 .20
20.3	24.53 − .18	45.80 − .21	41.90 −2.39	40.91 − .17	4.43 − .21	34.91 − .57	40.95 − .24	25.67 − .20
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 25.6	27.60 + .24	49.57 + .30	66.75 +2.63	43.66 + .26	8.25 + .36	37.21 + .47	44.93 + .39	29.31 + .35
Nov. 4.6	27.83 .22	49.86 .28	69.23 2.31	43.92 .24	8.60 .33	37.64 .40	45.31 .36	29.65 .33
14.6	28.05 .20	50.14 .26	71.38 1.98	44.16 .22	8.92 .30	38.01 .32	45.66 .33	29.97 .30
24.5	28.24 .17	50.39 .23	73.19 1.58	44.37 .19	9.20 .26	38.28 .23	45.99 .29	30.25 .27
Dec. 4.5	28.40 .13	50.61 .19	74.58 1.14	44.55 .16	9.45 .22	38.47 .14	46.26 .25	30.51 .23
14.5	28.50 + .09	50.78 + .14	75.49 + .66	44.70 + .12	9.65 + .18	38.55 + .04	46.49 + .20	30.72 + .18
24.5	28.58 .06	50.90 .10	75.90 + .15	44.79 .07	9.81 .13	38.54 − .07	46.67 .14	30.89 .13
34.4	28.62 + .02	50.98 + .06	75.80 − .35	44.85 + .02	9.90 + .07	38.42 − .16	46.77 + .07	30.99 + .08

Mean Solar Date.	η Geminor.	ψ¹ Aurigæ.	ν Geminor.	χ Draconis, S. P.	ε Geminor.	ψ⁵ Aurigæ.	θ Geminor.	ζ Mensæ.
	67° 28′	40° 39′	69° 43′	342° 41′	64° 46′	46° 19′	55° 55′	170° 42′
	h m 6 8	h m 6 16	h m 6 22	h m 6 22	h m 6 37	h m 6 39	h m 6 45	h m 6 48
	s	s	s	s	s	s	s	s
(Dec.30.5)	25.98 + .10	40.78 + .13	37.41 + .11	54.60 + .05	21.80 + .13	2.74 + .16	45.23 + .16	65.52 − .16
Jan. 9.5	26.06 + .05	40.88 + .06	37.48 .06	54.70 .15	21.90 .08	2.86 .09	45.35 .10	65.23 .42
19.4	26.09 .00	40.91 − .01	37.52 + .01	54.91 .29	21.96 + .03	2.92 + .03	45.43 + .04	64.67 .68
29.4	26.06 − .05	40.87 .07	37.51 − .04	55.29 .43	21.97 − .02	2.92 − .03	45.44 − .02	63.89 .89
Feb. 8.4	25.90 .09	40.76 .13	37.46 .08	55.77 .53	21.92 .07	2.85 .09	45.40 .07	62.89 1.09
18.4	25.88 − .12	40.61 − .18	37.35 − .12	56.35 + .62	21.82 − .11	2.73 − .14	45.30 − .12	61.71 −1.25
28.3	25.74 .15	40.40 .22	37.22 .15	57.02 .70	21.70 .14	2.56 .18	45.16 .16	60.38 1.39
Mar. 10.3	25.58 .17	40.16 .25	37.06 .17	57.75 .74	21.54 .16	2.38 .21	44.99 .18	58.93 1.48
20.3	25.40 .18	39.90 .26	36.89 .18	58.50 .75	21.37 .17	2.16 .23	44.81 .19	57.42 1.53
30.2	25.22 .17	39.64 .25	36.72 .17	59.26 .76	21.19 .18	1.92 .24	44.62 .20	55.87 1.55
Apr. 9.2	25.05 − .16	39.40 − .24	36.56 − .16	60.02 + .75	21.02 − .17	1.70 − .23	44.41 − .21	54.32 −1.56
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nov. 14.6	29.03 + .28	44.59 + .39	40.34 + .28	54.72 − .56	24.79 + .30	6.20 + .37	48.38 + .35	58.06 + .96
24.6	29.30 .25	44.96 .35	40.61 .26	54.21 .46	25.08 .28	6.56 .34	48.72 .32	58.91 .74
Dec. 4.6	29.54 .22	45.30 .30	40.86 .23	53.80 .34	25.35 .25	6.89 .30	49.02 .28	59.54 .52
14.5	29.75 + .18	45.57 + .24	41.07 + .19	53.53 − .21	25.59 + .21	7.16 + .26	49.28 + .24	59.95 + .26
24.5	29.91 .13	45.79 .18	41.25 .14	53.38 − .07	25.79 .17	7.41 .21	49.50 .19	60.07 − .01
34.5	30.01 + .06	45.94 + .12	41.36 + .08	53.39 + .09	25.94 + .13	7.58 + .14	49.67 + .14	59.93 − .27

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT OF WASHINGTON.

Mean Solar Date.	ζ Geminor.	63 Aurigæ.	25 Camelop.	γ² Volantis.	β Can. Min.	26 Lyncis.	Groombr. 1374.	ω¹ Cancri.
	69° 16′	50° 30′	7° 23′	160° 20′	81° 30′	42° 10′	15° 48′	64° 19′
	h m	h m	h m	h m	h m	h m	h m	h m
	6 57	7 4	7 8	7 9	7 21	7 46	7 47	7 54
	s	s	s	s	s	s	s	s
(Dec.30.5)	46.66 + .15	18.88 + .19	42.71 + .71	42.80 + .05	21.71 + .16	56.62 + .26	27.03 + .53	28.33 + .22
Jan. 9.5	46.78 .10	19.04 .12	43.25 + .35	42.79 − .08	21.85 .11	56.85 .20	27.47 .34	28.53 .17
19.5	46.86 + .05	19.13 + .06	43.42 .00	42.64 .20	21.93 .06	57.02 .13	27.73 .17	28.68 .11
29.4	46.88 .00	19.16 .00	43.27 − .33	42.38 .31	21.97 + .01	57.11 + .05	27.83 + .01	28.75 + .05
Feb. 8.4	46.86 − .05	19.13 − .06	42.77 .66	42.01 .42	21.96 − .04	57.12 − .02	27.77 − .15	28.78 .00
18.4	46.79 − .09	19.04 − .11	41.96 − .94	41.53 − .51	21.91 − .08	57.06 − .09	27.53 − .30	28.75 − .05
28.4	46.66 .13	18.90 .15	40.89 1.18	40.98 .60	21.81 .11	56.94 .14	27.17 .43	28.68 .09
Mar. 10.3	46.53 .15	18.73 .18	39.61 1.36	40.34 .65	21.69 .13	56.77 .18	26.68 .54	28.57 .12
20.3	46.37 .16	18.53 .20	38.17 1.46	39.68 .68	21.55 .15	56.58 .21	26.10 .62	28.42 .15
30.3	46.20 .17	18.33 .21	36.69 1.50	38.99 .69	21.39 .16	56.35 .23	25.45 .66	28.26 .16
Apr. 9.2	46.03 − .17	18.12 − .20	35.17 −1.50	38.29 − .68	21.23 − .16	56.11 − .24	24.78 − .68	28.10 − .16
19.2	45.87 − .16	17.93 − .18	33.69 −1.46	37.62 − .65	21.08 − .15	55.87 − .24	24.10 − .67	27.94 − .16
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nov. 24.6	49.76 + .29	22.44 + .33	52.68 +1.71	41.21 + .48	24.47 + .27	60.20 + .44	32.52 + .96	31.31 + .34
Dec. 4.6	50.04 .26	22.76 .31	54.27 1.47	41.63 .36	24.73 .25	60.62 .40	33.42 .84	31.64 .31
14.6	50.28 + .22	23.06 + .28	55.63 +1.20	41.93 + .25	24.98 + .22	61.00 + .35	34.20 + .72	31.94 + .28
24.5	50.49 .18	23.32 .23	56.68 .89	42.14 + .13	25.20 .19	61.33 .30	34.87 .60	32.21 .25
34.5	50.65 + .14	23.52 + .17	57.41 + .57	42.20 .00	25.37 + .16	61.61 + .25	35.40 + .47	32.44 + .21

Mean Solar Date.	ζ¹ Cancri.	β Cancri.	30 Monocerotis.	θ Chamæleontis.	σ Hydræ.	γ Cancri.	σ² Cancri. (*mean.*)	θ Hydræ.
	72° 2′	80° 29′	93° 33′	167° 8′	86° 17′	68° 9′	59° 1′	87° 14′
	h m	h m	h m	h m	h m	h m	h m	h m
	8 6	8 10	8 20	8 23	8 33	8 37	8 47	9 8
	s	s	s	s	s	s	s	s
(Dec.30.6)	5.32 + .21	43.47 + .20	19.49 + .20	55.03 + .31	10.66 + .20	6.42 + .25	43.86 + .27	48.41 + .26
Jan. 9.5	5.51 .17	43.65 .16	19.67 .16	55.25 + .14	10.85 .17	6.65 .20	44.11 .22	48.65 .21
19.5	5.66 .12	43.80 .11	19.81 .11	55.32 − .04	11.02 .13	6.83 .15	44.32 .17	48.84 .16
29.5	5.75 .06	43.88 .06	19.89 .06	55.19 .24	11.12 .08	6.95 .10	44.46 .12	48.97 .11
Feb. 8.5	5.79 + .01	43.92 + .01	19.92 + .01	54.88 .40	11.17 + .03	7.02 + .05	44.55 + .06	49.06 + .07
18.4	5.78 − .04	43.91 − .03	19.92 − .03	54.41 − .56	11.18 − .02	7.04 .00	44.59 .00	49.11 + .02
28.4	5.72 .08	43.86 .07	19.87 .07	53.77 .70	11.14 .06	7.01 − .05	44.56 − .05	49.10 − .03
Mar. 10.4	5.61 .11	43.76 .11	19.77 .10	53.01 .81	11.06 .09	6.93 .09	44.49 .09	49.06 .07
20.4	5.49 .13	43.64 .13	19.66 .12	52.16 .90	10.96 .11	6.82 .12	44.37 .12	48.97 .09
30.3	5.34 .15	43.50 .14	19.52 .14	51.22 .96	10.83 .13	6.69 .14	44.23 .14	48.87 .11
Apr. 9.3	5.19 − .16	43.36 − .15	19.37 − .16	50.23 −1.01	10.69 − .14	6.54 − .15	44.08 − .16	48.75 − .13
19.3	5.03 .15	43.21 .15	19.21 .15	49.21 1.03	10.55 .15	6.39 .15	43.91 .16	48.62 .14
29.2	4.89 .14	43.06 .14	19.07 .14	48.17 1.02	10.40 .14	6.24 .14	43.76 .15	48.48 .13
May 9.2	4.76 − .12	42.94 − .11	18.93 − .13	47.16 −1.00	10.27 − .13	6.10 − .13	43.61 − .15	48.35 − .12

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Argus.	α Lyncis.	10 Leonis Minoris.	ο Leonis.	ζ Chamæleontis.	19 Leonis Minoris.	π Leonis.	λ Ursæ Majoris.
	159° 17′ h m 9 12	55° 9′ h m 9 14	53° 8′ h m 9 27	79° 37′ h m 9 35	170° 28′ h m 9 36	48° 26′ h m 9 51	81° 27′ h m 9 54	46° 33′ h m 10 10
	s	s	s	s	s	s	s	s
(Dec. 30.6)	3.38 + .39	33.01 + .30	41.01 + .32	26.87 + .28	65.48 + .83	8.78 + .37	33.94 + .28	39.45 + .40
Jan. 9.6	3.72 .28	33.29 .26	41.31 .28	27.13 .24	66.20 .60	9.12 .32	34.20 .25	39.83 .35
19.6	3.95 .16	33.53 .21	41.58 .23	27.34 .20	66.70 .37	9.41 .27	34.43 .21	40.16 .29
29.5	4.05 + .04	33.72 .15	41.78 .17	27.52 .15	66.96 + .14	9.66 .21	34.62 .17	40.41 .23
Feb. 8.5	4.04 − .08	33.83 .09	41.91 .11	27.64 .10	66.99 − .09	9.83 .15	34.77 .12	40.62 .17
18.5	3.91 − .19	33.89 + .03	42.00 + .05	27.71 + .05	66.77 − .31	9.94 + .08	34.85 + .07	40.74 + .11
28.5	3.66 .29	33.90 − .02	42.02 − .01	27.74 + .01	66.36 .52	9.99 + .02	34.90 + .02	40.83 + .05
Mar. 10.4	3.33 .38	33.85 .07	41.99 .06	27.72 − .03	65.73 .72	9.98 − .04	34.90 − .02	40.84 − .02
20.4	2.92 .45	33.75 .11	41.90 .11	27.66 .07	64.92 .89	9.90 .09	34.86 .06	40.79 .08
30.4	2.44 .50	33.63 .14	41.77 .14	27.57 .10	63.96 1.03	9.79 .13	34.79 .09	40.68 .12
Apr. 9.3	1.92 − .54	33.48 − .16	41.62 − .16	27.46 − .12	62.86 −1.14	9.65 − .16	34.69 − .11	40.55 − .15
19.3	1.37 .56	33.31 .17	41.46 .17	27.34 .13	61.69 1.22	9.48 .18	34.57 .12	40.40 .17
29.3	0.79 .58	33.14 .17	41.29 .17	27.21 .13	60.43 1.27	9.30 .18	34.45 .12	40.22 .18
May 9.3	+0.21 .57	32.98 .16	41.13 .16	27.08 .12	59.15 1.30	9.12 .18	34.33 .12	40.03 .19
19.2	−0.36 − .56	32.83 − .14	40.97 − .15	26.96 − .11	57.83 −1.34	8.95 − .16	34.21 − .12	39.85 − .18

Mean Solar Date.	μ Hydræ.	β Leonis Minoris.	α Antliæ.	β Octantis, S. P.	41 Leonis Minoris.	δ^2 Chamæleontis.	46 Leonis Minoris.	Groombr. 1706.
	106° 17′ h m 10 20	52° 45′ h m 10 21	120° 31′ h m 10 22	188° 3′ h m 10 35	66° 15′ h m 10 37	169° 59′ h m 10 44	55° 12′ h m 10 47	11° 39′ h m 10 51
	s	s	s	s	s	s	s	s
Jan. 19.6	55.63 + .23	43.09 + .28	15.97 + .22	1.15 − .64	36.84 + .26	49.72 + .75	20.81 + .30	29.70 + .96
29.6	55.83 .18	43.34 .23	16.17 .17	0.63 .39	37.08 .22	50.37 .55	21.09 .25	30.58 .79
Feb. 8.6	55.99 .13	43.54 .17	16.33 .12	0.36 − .15	37.28 .17	50.82 .34	21.32 .20	31.28 .60
18.5	56.09 .08	43.68 .11	16.42 .07	0.33 + .09	37.43 .12	51.06 + .13	21.49 .14	31.78 .39
28.5	56.15 + .03	43.77 + .05	16.48 + .02	0.54 .32	37.52 .07	51.09 − .07	21.60 .08	32.06 + .17
Mar. 10.5	56.16 − .01	43.79 .00	16.47 − .02	0.97 + .55	37.56 + .02	50.92 − .26	21.65 + .03	32.13 − .03
20.4	56.14 .04	43.78 − .05	16.44 .06	1.65 .78	37.56 − .02	50.57 .45	21.66 − .02	32.00 .23
30.4	56.08 .07	43.70 .09	16.35 .09	2.54 1.00	37.53 .06	50.02 .62	21.62 .06	31.67 .42
Apr. 9.4	55.99 .09	43.59 .12	16.25 .11	3.64 1.17	37.45 .09	49.33 .76	21.53 .09	31.15 .58
19.4	55.89 .11	43.46 .14	16.12 .13	4.89 1.33	37.35 .11	48.50 .89	21.43 .11	30.51 .70
29.3	55.77 − .12	43.32 − .15	15.98 − .14	6.31 +1.47	37.24 − .12	47.55 −1.00	21.31 − .13	29.74 − .80
May 9.3	55.65 .12	43.16 .16	15.84 .15	7.84 1.58	37.11 .13	46.51 1.07	21.17 .14	28.91 .86
19.3	55.53 .12	43.00 .16	15.69 .15	9.48 1.67	36.99 .12	45.42 1.12	21.03 .15	28.02 .89
29.3	55.41 .12	42.85 .15	15.54 .14	11.18 1.70	36.87 .11	44.28 1.16	20.88 .14	27.12 .88
June 8.2	55.29 − .12	42.71 − .15	15.41 − .13	12.88 +1.68	36.76 − .10	43.11 −1.18	20.75 − .13	26.25 − .85

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Octantis.	p³ Leonis.	ψ Urs. Maj.	ν Urs. Maj.	ξ Hydræ.	χ Urs. Maj.	π Virginis.	ε Corvi.
	174° 1′	87° 28′	44° 55′	56° 19′	121° 16′	41° 38′	82° 47′	112° 1′
	10ʰ 59ᵐ	11ʰ 1ᵐ	11ʰ 3ᵐ	11ʰ 12ᵐ	11ʰ 27ᵐ	11ʰ 40ᵐ	11ʰ 55ᵐ	12ʰ 4ᵐ
	s	s	s	s	s	s	s	s
Feb. 8.6	70.54 + .67	27.69 + .18	40.83 + .23	43.67 + .23	45.12 + .20	26.06 + .30	24.28 + .23	37.96 + .24
18.6	71.04 + .33	27.84 .13	41.04 .17	43.87 .17	45.30 .16	26.33 .23	24.49 .18	38.17 .19
28.5	71.20 .00	27.94 .08	41.19 .11	44.00 .11	45.44 .11	26.53 .16	24.65 .14	38.35 .14
Mar. 10.5	71.05 − .39	28.00 .04	41.27 + .05	44.09 .06	45.52 .06	26.65 .10	24.76 .10	38.46 .10
20.5	70.56 .63	28.03 + .01	41.29 − .01	44.12 + .01	45.55 + .02	26.72 + .04	24.84 .06	38.55 .06
30.4	69.80 − .92	28.01 − .02	41.25 − .06	44.11 − .03	45.56 − .02	26.73 − .02	24.89 + .02	38.58 + .03
Apr. 9.4	68.73 1.18	27.98 .05	41.16 .10	44.06 .07	45.53 .05	26.68 .07	24.90 − .01	38.62 .00
19.4	67.44 1.40	27.91 .08	41.05 .13	43.97 .10	45.47 .08	26.58 .11	24.87 .04	38.60 − .03
29.4	65.92 1.61	27.82 .10	40.90 .15	43.86 .12	45.37 .10	26.46 .14	24.82 .06	38.57 .05
May 9.3	64.22 1.76	27.72 .10	40.74 .17	43.74 .13	45.27 .11	26.30 .17	24.76 .07	38.50 .07
19.3	62.39 −1.88	27.62 − .10	40.56 − .18	43.60 − .14	45.14 − .12	26.12 − .18	24.69 − .08	38.42 − .08
29.3	60.45 1.96	27.52 .10	40.37 .19	43.47 .14	45.02 .13	25.93 .19	24.61 .08	38.34 .09
June 8.3	58.48 1.96	27.42 .09	40.19 .18	43.33 .14	44.88 .13	25.72 .19	24.51 .10	38.23 .10
18.2	56.53 −1.94	27.33 − .08	40.02 − .17	43.20 − .13	44.75 − .12	25.53 − .18	24.42 − .09	38.13 − .08

Mean Solar Date.	2 Can. Ven.	6 Urs. Min.	δ² Corvi.	β Can. Ven.	γ Virginis, (*mean.*)	31 Comæ Berenices.	γ Cassiop., S. P.	43 Cephei, S. P.
	48° 45′	1° 42′	105° 55′	48° 4′	90° 52′	61° 53′	330° 8′	355° 41′
	12ʰ 10ᵐ	12ʰ 14ᵐ	12ʰ 24ᵐ	12ʰ 28ᵐ	12ʰ 36ᵐ	12ʰ 46ᵐ	12ʰ 50ᵐ	12ʰ 53ᵐ
	s	s	s	s	s	s	s	s
Feb. 8.6	47.45 + .29	69.36 +5.63	20.42 + .24	41.18 + .30	15.01 + .25	30.34 + .28	12.44 − .31	52.96 −2.40
18.6	47.72 .24	74.47 4.51	20.65 .20	41.46 .26	15.24 .21	30.60 .24	12.17 .24	50.77 1.99
28.6	47.94 .19	78.37 3.26	20.84 .16	41.70 .21	15.43 .17	30.83 .22	11.98 .17	48.99 1.56
Mar. 10.5	48.10 .13	80.99 1.90	20.99 .12	41.88 .15	15.59 .13	31.02 .16	11.84 .10	47.65 1.00
20.5	48.20 .08	82.17 + .48	21.09 .08	42.00 .10	15.70 .10	31.16 .11	11.78 − .03	46.81 − .56
30.5	48.25 + .03	81.95 − .90	21.16 + .05	42.08 + .05	15.79 + .07	31.24 + .07	11.78 + .06	46.53 .00
Apr. 9.5	48.26 − .02	80.37 2.22	21.20 + .02	42.10 .00	15.84 + .03	31.30 + .03	11.90 .14	46.81 + .53
19.4	48.22 .06	77.52 3.43	21.20 − .01	42.08 − .04	15.85 .00	31.31 .00	12.07 .22	47.59 1.04
29.4	48.14 .09	73.50 4.50	21.19 .03	42.02 .08	15.84 − .02	31.30 − .03	12.33 .30	48.90 1.53
May 9.4	48.03 .12	68.51 5.39	21.15 .05	41.92 .11	15.82 .04	31.25 .06	12.68 .39	50.65 1.93
19.4	47.90 − .14	62.71 −6.09	21.09 − .07	41.80 − .13	15.77 − .06	31.19 − .08	13.09 + .43	52.77 +2.29
29.3	47.76 .15	56.33 6.57	21.02 .08	41.66 .15	15.71 .07	31.09 .10	13.54 .47	55.24 2.57
June 8.3	47.60 .16	49.56 6.86	20.94 .09	41.51 .16	15.64 .08	30.99 .11	14.04 .52	57.92 2.76
18.3	47.44 − .16	42.60 −6.96	20.85 − .10	41.34 − .17	15.56 − .09	30.88 − .11	14.59 + .57	60.77 +2.91

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Muscæ.	ε Virginis.	20 Can. Ven.	κ Octantis.	B.A.C.4536.	m Virginis.	θ Apodis.	π Hydræ.
	160° 58′	78° 28′	48° 52′	175° 14′	52° 16′	98° 10′	166° 17′	116° 10′
	h m 12 54	h m 12 56	h m 13 12	h m 13 23	h m 13 30	h m 13 35	h m 13 54	h m 14 0
	s	s	s	s	s	s	s	s
Mar. 0.6	57.26 + .44	52.26 + .20	46.47 + .25	47.21 +1.86	2.68 + .28	60.61 + .22	56.42 + .81	17.30 + .25
10.6	57.65 .34	52.44 .16	46.70 .20	48.89 1.49	2.93 .22	60.81 .19	57.17 .70	17.54 .23
20.6	57.93 .24	52.58 .12	46.89 .15	50.20 1.12	3.12 .17	60.99 .16	57.81 .57	17.76 .20
30.5	58.14 .14	52.67 .08	47.00 .10	51.14 .74	3.27 .12	61.14 .13	58.31 .44	17.94 .17
Apr. 9.5	58.22 + .04	52.74 .05	47.09 .05	51.68 + .36	3.37 .07	61.25 .09	58.70 .31	18.09 .13
19.5	58.23 − .05	52.77 + .02	47.12 + .01	51.86 − .02	3.42 + .03	61.32 + .06	58.94 + .18	18.20 + .09
29.4	58.13 .13	52.77 − .01	47.12 − .03	51.63 .41	3.44 .00	61.37 .04	59.06 + .05	18.28 .06
May 9.4	57.96 .21	52.76 .03	47.07 .07	51.03 .79	3.42 − .04	61.40 + .02	59.04 − .08	18.33 .04
19.4	57.71 .29	52.72 .05	46.98 .10	50.04 1.14	3.37 .07	61.40 − .01	58.90 .20	18.36 + .01
29.4	57.38 .36	52.66 .07	46.87 .12	48.75 1.44	3.29 .10	61.38 .03	58.63 .32	18.36 − .01
June 8.3	57.00 − .43	52.59 − .08	46.74 − .14	47.17 −1.73	3.17 − .12	61.34 − .05	58.26 − .43	18.34 − .04
18.3	56.55 .47	52.51 .09	46.59 .16	45.29 1.97	3.05 .13	61.29 .07	57.76 .54	18.28 .06
28.3	56.06 .48	52.40 .11	46.43 .17	43.22 2.15	2.91 .15	61.21 .09	57.18 .62	18.21 .09
July 8.3	55.58 − .47	52.30 − .12	46.26 − .18	40.99 −2.31	2.75 − .17	61.11 − .11	56.53 − .68	18.10 − .12

Mean Solar Date.	δ Bootis.	κ Virginis.	4 Urs. Min.	δ Octantis.	λ Bootis.	λ Virginis.	μ Hydri, S. P.	α Apodis.
	64° 24′	99° 47′	11° 57′	173° 11′	43° 25′	102° 53′	190° 25′	168° 35′
	h m 14 5	h m 14 7	h m 14 9	h m 14 9	h m 14 12	h m 14 13	h m 14 33	h m 14 34
	s	s	s	s	s	s	s	s
Mar. 20.6	32.76 + .20	12.44 + .19	23.46 + .61	53.78 +1.16	21.11 + .23	20.32 + .21	53.13 − .82	38.49 + .86
30.6	32.94 .15	12.62 .16	23.97 .42	54.85 .96	21.32 .18	20.51 .17	52.39 .66	39.28 .72
Apr. 9.5	33.07 .11	12.77 .12	24.29 .23	55.70 .70	21.48 .13	20.66 .13	51.82 .48	39.93 .58
19.5	33.16 .08	12.87 .09	24.42 + .04	56.25 .42	21.58 .08	20.78 .10	51.44 .29	40.43 .42
29.5	33.22 .05	12.95 .06	24.37 − .14	56.55 + .15	21.64 + .03	20.86 .07	51.24 − .10	40.77 .26
May 9.5	33.26 + .02	13.00 + .04	24.13 − .32	56.56 − .13	21.64 − .02	20.93 + .05	51.24 + .10	40.94 + .10
19.4	33.26 − .01	13.04 + .02	23.73 .48	56.31 .38	21.60 .06	20.96 + .02	51.45 .30	40.97 − .06
29.4	33.23 .04	13.04 − .01	23.17 .61	55.80 .64	21.52 .10	20.98 .00	51.84 .48	40.82 .23
June 8.4	33.17 .07	13.02 .03	22.50 .73	55.02 .89	21.41 .13	20.95 − .03	52.42 .66	40.51 .36
18.3	33.10 .09	12.98 .05	21.72 .82	54.02 1.10	21.27 .16	20.92 .05	53.17 .81	40.05 .52
28.3	33.00 − .11	12.92 − .07	20.85 − .90	52.81 −1.28	21.10 − .18	20.86 − .07	54.04 + .94	39.46 − .64
July 8.3	32.88 .12	12.84 .09	19.91 .95	51.46 1.43	20.91 .20	20.78 .09	55.06 1.07	38.76 .75
18.3	32.76 .13	12.73 .10	18.94 .98	49.95 1.57	20.70 .22	20.67 .11	56.19 1.14	37.95 .84
28.2	32.62 − .14	12.62 − .12	17.95 −1.00	48.32 −1.69	20.48 − .23	20.56 − .11	57.35 +1.17	37.08 − .90

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	33 Bootis.	47 Cephei, S. P.	γ Scorpii.	δ Bootis.	ρ Octantis.	β Cor. Bor.	γ Camelop., S. P.	δ¹ Apodis.
	45° 8′	349° 0′	114° 52′	56° 17′	174° 6′	60° 32′	341° 0′	168° 25′
	14h 34m	14h 51m	14h 57m	15h 11m	15h 18m	15h 23m	15h 38m	16h 4m
	s	s	s	s	s	s	s	s
Mar.30.6	53.49 + .21	44.80 − .49	49.64 + .22	13.04 + .23	46.96 +1.76	26.58 + .24	60.53 − .40	25.46 +1.11
Apr. 9.6	53.68 .16	44.41 .29	49.85 .19	13.25 .19	48.58 1.47	26.79 .20	60.20 .26	26.51 .98
19.5	53.81 .11	44.22 − .08	50.04 .16	13.42 .15	49.91 1.18	26.97 .16	60.01 .13	27.43 .85
29.5	53.89 .06	44.26 + .14	50.19 .12	13.54 .11	50.94 .87	27.12 .12	59.94 − .01	28.21 .71
May 9.5	53.94 + .02	44.50 .36	50.29 .10	13.63 .07	51.65 .55	27.22 .08	59.99 + .12	28.84 .55
19.5	53.94 − .03	44.98 + .57	50.37 + .07	13.69 + .04	52.04 + .23	27.29 + .05	60.18 + .25	29.32 + .39
29.4	53.89 .07	45.65 .75	50.43 .04	13.71 + .01	52.08 − .11	27.33 + .02	60.50 .37	29.62 .22
June 8.4	53.79 .10	46.49 .91	50.45 + .01	13.70 − .04	51.81 .45	27.33 − .02	60.93 .49	29.75 + .04
18.4	53.68 .13	47.47 1.05	50.44 − .02	13.64 .07	51.19 .76	27.29 .05	61.48 .58	29.70 − .14
28.3	53.54 .16	48.60 1.17	50.41 .05	13.55 .10	50.28 1.06	27.23 .08	62.09 .66	29.47 .32
July 8.3	53.35 − .19	49.80 +1.24	50.34 − .08	13.44 − .12	49.07 −1.33	27.13 − .11	62.81 + .73	29.07 − .47
18.3	53.15 .21	51.08 1.29	50.24 .10	13.30 .14	47.63 1.56	27.01 .13	63.57 .78	28.53 .60
28.3	52.94 .23	52.38 1.32	50.13 .12	13.15 .16	45.95 1.74	26.87 .15	64.37 .81	27.87 .74
Aug. 7.2	52.70 .23	53.71 1.30	49.99 .14	12.97 .18	44.16 1.83	26.70 .17	65.20 .82	27.08 .83
17.2	52.47 .23	55.01 1.28	49.84 .16	12.78 .19	42.30 1.86	26.52 .18	66.02 .82	26.21 .89
27.2	52.25 − .22	56.27 +1.24	49.68 − .17	12.58 − .19	40.44 −1.84	26.34 − .18	66.84 + .81	25.30 − .92

Mean Solar Date.	φ Herculis.	σ Cor. Bor. (*mean.*)	γ Apodis.	η Urs. Min.	η Ophiuchi.	π Herculis.	θ Ophiuchi.	δ Aræ.
	44° 47′	55° 52′	168° 39′	14° 0′	105° 36′	53° 4′	114° 54′	150° 36′
	16h 5m	16h 10m	16h 17m	16h 20m	17h 4m	17h 11m	17h 15m	17h 21m
	s	s	s	s	s	s	s	s
Apr. 9.6	25.53 + .25	41.79 + .25	7.87 +1.04	42.66 + .63	15.53 + .28	20.43 + .30	27.34 + .32	28.21 + .55
19.6	25.76 .21	42.02 .21	8.85 .92	43.22 .50	15.80 .26	20.71 .27	27.64 .29	28.74 .51
29.6	25.96 .17	42.20 .17	9.71 .77	43.65 .36	16.05 .24	20.96 .24	27.91 .26	29.22 .46
May 9.6	26.11 .13	42.36 .13	10.40 .62	43.93 .21	16.27 .22	21.18 .20	28.16 .24	29.66 .41
19.5	26.22 .08	42.48 .09	10.95 .46	44.06 + .05	16.47 .19	21.36 .16	28.39 .21	30.05 .35
29.5	26.28 + .04	42.55 + .05	11.32 + .28	44.04 − .11	16.65 + .16	21.51 + .12	28.59 + .18	30.37 + .29
June 8.5	26.29 − .01	42.59 + .02	11.52 + .10	43.86 .26	16.79 .12	21.60 .08	28.75 .14	30.63 .22
18.4	26.26 .06	42.60 − .02	11.53 − .08	43.53 .40	16.89 .08	21.66 + .04	28.88 .10	30.82 .15
28.4	26.16 .11	42.55 .06	11.36 .26	43.06 .53	16.96 .04	21.68 − .01	28.95 .06	30.93 + .07
July 8.4	26.04 .14	42.48 .10	11.01 .43	42.47 .65	16.98 + .01	21.64 .06	29.00 + .02	30.96 .00
18.4	25.88 − .17	42.36 − .13	10.50 − .58	41.76 − .75	16.98 − .03	21.57 − .10	29.00 − .02	30.93 − .08
28.3	25.69 .21	42.22 .16	9.84 .72	40.98 .82	16.93 .07	21.45 .14	28.96 .06	30.80 .15
Aug. 7.3	25.46 .24	42.05 .18	9.07 .83	40.12 .89	16.84 .10	21.28 .17	28.87 .10	30.62 .21
17.3	25.22 .26	41.85 .20	8.19 .91	39.20 .94	16.73 .12	21.10 .20	28.75 .13	30.37 .27
27.3	24.95 .27	41.64 .21	7.25 .95	38.25 .96	16.59 .14	20.89 .22	28.61 .15	30.07 .32
Sept. 6.2	24.68 − .26	41.43 − .22	6.29 − .95	37.29 − .95	16.44 − .16	20.65 − .23	28.45 − .17	29.72 - .35
16.2	24.42 .25	41.21 .22	5.35 .90	36.34 .92	16.27 .16	20.42 .24	28.27 .18	29.37 .35
26.2	24.17 .23	41.00 .23	4.49 .83	35.46 .86	16.11 .15	20.18 .23	28.10 .17	29.02 .34
Oct. 6.1	23.96 − .18	40.77 − .24	3.70 − .76	34.63 − .80	15.97 − .14	19.96 − .22	27.94 − .16	28.70 − .31

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombr. 944,S.P.	ι Herculis.	θ Herculis.	υ Herculis.	λ Sagittarii.	χ Draconis.	ζ Pavonis.	γ Lyræ.
	355° 9′	43° 56′	52° 44′	61° 15′	115° 29′	17° 19′	161° 31′	57° 27′
	h m 17 27	h m 17 36	h m 17 52	h m 18 3	h m 18 21	h m 18 22	h m 18 30	h m 18 54
	s	s	s	s	s	s	s	s
May 19.6	32.56 − .41	28.98 + .19	36.92 + .20	23.94 + .20	24.07 + .26	62.43 + .42	36.87 + .65	58.04 + .27
29.6	32.38 + .05	29.15 .14	37.10 .16	24.13 .17	24.32 .24	62.79 .30	37.49 .58	58.28 .23
June 8.5	32.66 .52	29.27 .09	37.25 .12	24.30 .14	24.55 .21	63.03 .18	38.04 .48	58.50 .19
18.5	33.42 .96	29.34 + .05	37.34 .08	24.42 .10	24.74 .17	63.15 + .05	38.46 .36	58.68 .15
28.5	34.61 1.39	29.37 .00	37.40 + .03	24.49 .06	24.89 .13	63.14 − .08	38.78 .26	58.80 .10
July 8.4	36.21 +1.78	29.33 − .06	37.41 − .02	24.53 + .02	24.99 + .08	63.00 − .20	38.98 + .13	58.88 + .05
18.4	38.18 2.12	29.24 .11	37.37 .07	24.53 − .03	25.05 + .03	62.73 .32	39.05 .00	58.93 + .01
28.4	40.45 2.42	29.10 .16	37.28 .11	24.48 .08	25.06 − .01	62.37 .43	38.99 − .12	58.91 − .04
Aug. 7.4	43.02 2.67	28.92 .20	37.15 .15	24.37 .12	25.03 .05	61.87 .53	38.82 .23	58.86 .09
17.3	45.80 2.85	28.70 .23	36.98 .18	24.24 .15	24.96 .09	61.31 .62	38.53 .34	58.74 .13
27.3	48.73 +3.00	28.45 − .26	36.79 − .21	24.07 − .17	24.84 − .13	60.64 − .69	38.14 − .44	58.60 − .16
Sept. 6.3	51.80 3.09	28.16 .29	36.56 .23	23.89 .19	24.69 .16	59.92 .75	37.66 .51	58.42 .19
16.3	54.92 3.11	27.87 .30	36.32 .24	23.68 .21	24.53 .18	59.13 .79	37.12 .56	58.22 .21
26.2	58.03 3.07	27.57 .29	36.07 .25	23.47 .22	24.35 .17	58.34 .80	36.55 .57	58.00 .22
Oct. 6.2	61.07 3.00	27.29 .28	35.83 .24	23.25 .21	24.18 .16	57.53 .79	35.97 .58	57.78 .22
16.2	64.02 +2.90	27.02 − .27	35.60 − .23	23.05 − .20	24.02 − .15	56.74 − .77	35.41 − .56	57.56 − .22

Mean Solar Date.	ι Lyræ.	25 Camelop. S. P.	θ Lyræ.	β Cygni.	β Sagittæ.	δ Cygni.	Groombr. 1374,S.P.	ε Pavonis.
	54° 4′	352° 37′	52° 3′	62° 16′	72° 46′	45° 8′	344° 12′	163° 11′
	h m 19 3	h m 19 8	h m 19 12	h m 19 26	h m 19 36	h m 19 41	h m 19 47	h m 19 48
	s	s	s	s	s	s	s	s
May 29.6	30.83 + .24	29.40 − .59	40.92 + .26	26.02 + .26	16.21 + .28	39.48 + .29	22.03 − .34	18.06 + .80
June 8.6	31.05 .20	28.95 .31	41.16 .22	26.26 .22	16.46 .24	39.75 .25	21.75 .22	18.82 .71
18.6	31.24 .16	28.78 − .03	41.35 .17	26.47 .18	16.68 .20	39.98 .20	21.59 − .10	19.49 .62
28.5	31.38 .11	28.89 + .26	41.50 .12	26.64 .14	16.86 .16	40.16 .15	21.56 + .03	20.06 .51
July 8.5	31.46 .06	29.28 .53	41.59 .07	26.74 .10	17.00 .12	40.28 .10	21.68 .17	20.50 .38
18.5	31.50 + .02	29.96 + .80	41.64 + .02	26.83 + .05	17.09 + .08	40.36 + .04	21.90 + .29	20.81 + .24
28.4	31.50 − .03	30.92 1.07	41.64 − .03	26.86 .00	17.15 + .03	40.37 − .02	22.25 .42	20.97 + .10
Aug. 7.4	31.44 .09	32.09 1.28	41.59 .08	26.84 − .05	17.15 − .01	40.33 .07	22.74 .53	21.01 − .04
17.4	31.33 .13	33.48 1.49	41.47 .13	26.78 .09	17.12 .05	40.23 .12	23.31 .63	20.89 .18
27.4	31.19 .17	35.07 1.69	41.33 .17	26.66 .13	17.04 .09	40.09 .17	23.99 .73	20.65 .31
Sept. 6.3	31.00 − .20	36.86 +1.84	41.14 − .20	26.52 − .16	16.93 − .13	39.89 − .21	24.79 + .82	20.28 − .42
16.3	30.80 .22	38.76 1.95	40.93 .23	26.35 .18	16.78 .16	39.67 .24	25.63 .88	19.80 .51
26.3	30.56 .23	40.76 2.04	40.69 .24	26.16 .19	16.62 .17	39.42 .26	26.55 .95	19.26 .58
Oct. 6.3	30.33 .24	42.84 2.09	40.45 .24	25.96 .20	16.45 .18	39.15 .28	27.53 .98	18.64 .63
16.2	30.09 .23	44.95 2.08	40.21 .23	25.76 .19	16.27 .17	38.87 .28	28.53 1.00	18.00 .64
26.2	29.86 − .21	47.00 +2.05	39.98 − .22	25.57 − .18	16.10 − .16	38.59 − .27	29.54 +1.01	17.36 − .62
Nov. 5.2	29.67 − .18	49.05 +2.02	39.76 − .21	25.39 − .16	15.95 − .14	38.32 − .26	30.56 +1.02	16.76 − .59

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Sagittæ.	c Sagittarii.	θ Aquilæ.	31 Cygni.	α Delphini.	β Pavonis.	ψ Capricor.	ε Cygni.
	70° 48′	118° 0′	91° 8′	43° 35′	74° 28′	156° 35′	115° 39′	56° 26′
	h m	h m	h m	h m	h m	h m	h m	h m
	19 53	19 56	20 5	20 10	20 34	20 35	20 39	20 41
	s	s	s	s	s	s	s	s
June 18.6	61.94 + .21	7.39 + .27	49.14 + .23	17.69 + .24	41.97 + .23	23.98 + .53	48.07 + .28	54.69 + .26
28.6	62.13 .17	7.64 .22	49.35 .20	17.91 .19	42.19 .21	24.48 .47	48.33 .25	54.93 .22
July 8.6	62.29 .13	7.84 .18	49.54 .16	18.08 .14	42.39 .18	24.92 .40	48.57 .22	55.14 .18
18.5	62.40 .09	8.00 .13	49.68 .12	18.19 .08	42.55 .13	25.28 .30	48.77 .16	55.29 .13
28.5	62.46 + .05	8.10 .08	49.77 .07	18.23 + .02	42.65 .08	25.53 .19	48.92 .12	55.39 .08
Aug. 7.5	62.49 .00	8.17 + .03	49.81 + .03	18.23 − .03	42.71 + .04	25.66 + .09	49.01 + .07	55.44 + .03
17.4	62.46 − .05	8.17 − .02	49.82 − .01	18.17 .09	42.74 .00	25.70 − .01	49.06 + .02	55.45 − .02
27.4	62.40 .09	8.13 .06	49.79 .05	18.04 .14	42.72 − .04	25.64 .11	49.06 − .02	55.41 .06
Sept. 6.4	62.29 .12	8.04 .10	49.72 .09	17.88 .19	42.65 .08	25.48 .21	49.02 .06	55.32 .10
16.4	62.17 .15	7.92 .13	49.61 .12	17.67 .23	42.55 .11	25.22 .29	48.93 .10	55.20 .14
26.3	62.01 − .17	7.77 − .15	49.48 − .14	17.43 − .26	42.42 − .13	24.90 − .36	48.81 − .13	55.03 − .17
Oct. 6.3	61.84 .18	7.61 .17	49.34 .15	17.16 .27	42.28 .15	24.51 .40	48.67 .15	54.86 .19
16.2	61.67 .18	7.43 .17	49.19 .15	16.89 .28	42.12 .16	24.09 .43	48.51 .16	54.66 .20
26.2	61.49 .17	7.26 .16	49.04 .15	16.61 .28	41.96 .16	23.65 .44	48.35 .16	54.46 .20
Nov. 5.2	61.33 .15	7.10 .14	48.89 .13	16.33 .27	41.81 .15	23.21 .42	48.19 .15	54.26 .20
15.2	61.19 − .12	6.97 − .12	48.77 − .11	16.08 − .25	41.66 − .14	22.80 − .39	48.05 − .14	54.06 − .18
25.2	61.10 − .08	6.87 − .09	48.68 − .08	15.84 − .23	41.53 − .12	22.42 − .36	47.92 − .12	53.89 − .16

Mean Solar Date.	τ Cygni.	ζ Capricor.	74 Cygni.	λ¹ Octantis.	ζ Chamæleontis, S.P.	π² Cygni.	16 Pegasi.	π Pegasi.
	52° 25′	112° 52′	50° 4′	173° 13′	189° 32′	41° 11′	64° 35′	57° 21′
	h m	h m	h m	h m	h m	h m	h m	h m
	21 10	21 20	21 32	21 34	21 36	21 42	21 48	22 5
	s	s	s	s	s	s	s	s
July 8.6	33.31 + .21	36.26 + .26	41.62 + .23	44.07 +1.44	52.13 − .83	52.37 + .26	13.59 + .24	15.99 + .27
18.6	33.50 .16	36.49 .21	41.83 .19	45.37 1.16	51.38 .67	52.61 .21	13.81 .20	16.24 .22
28.5	33.64 .11	36.68 .16	41.99 .14	46.39 .87	50.79 .46	52.80 .15	13.99 .16	16.44 .17
Aug. 7.5	33.72 .06	36.82 .11	42.11 .09	47.12 .55	50.46 .24	52.92 .09	14.12 .11	16.59 .12
17.5	33.76 + .01	36.90 .06	42.16 + .04	47.49 + .21	50.30 − .04	52.99 + .03	14.21 .07	16.69 .08
27.5	33.74 − .04	36.94 + .02	42.18 − .01	47.54 − .12	50.37 + .21	52.99 − .02	14.26 + .02	16.76 + .03
Sept. 6.4	33.68 .09	36.95 − .03	42.13 .06	47.25 .46	50.72 .44	52.96 .08	14.26 − .02	16.76 − .01
16.4	33.56 .13	36.91 .07	42.04 .11	46.61 .78	51.25 .64	52.85 .13	14.21 .06	16.74 .05
26.4	33.42 .16	36.81 .10	41.91 .15	45.69 1.06	52.00 .86	52.70 .17	14.14 .09	16.67 .09
Oct. 6.4	33.24 .19	36.70 .12	41.75 .18	44.49 1.30	52.95 1.64	52.50 .20	14.02 .12	16.56 .12
16.3	33.05 − .20	36.57 − .14	41.56 − .20	43.08 −1.48	54.08 +1.19	52.29 − .22	13.90 − .14	16.42 − .14
26.3	32.85 .21	36.42 .15	41.36 .21	41.52 1.61	55.34 1.29	52.05 .24	13.75 .16	16.27 .16
Nov. 5.3	32.64 .20	36.27 .14	41.16 .22	39.86 1.66	56.66 1.34	51.80 .26	13.60 .16	16.11 .17
15.2	32.44 .20	36.13 .13	40.94 .20	38.19 1.65	58.02 1.36	51.53 .26	13.43 .15	15.93 .17
25.2	32.24 .18	36.00 .12	40.75 .20	36.55 1.58	59.38 1.32	51.28 .25	13.29 .14	15.76 .16
Dec. 5.2	32.07 − .16	35.89 − .10	40.56 − .18	35.03 −1.46	60.66 +1.24	51.03 − .23	13.16 − .12	15.61 − .14

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT OF WASHINGTON.

Mean Solar Date.	ν Octantis.	γ Aquarii.	σ Aquarii.	α Lacertæ.	10 Lacertæ.	β Octantis.	λ Pegasi.	Groombr. 1706, S. P.
	176° 31′	91° 56′	101° 14′	40° 16′	51° 30′	171° 57′	67° 0′	348° 21′
	22h 11m	22h 16m	22h 25m	22h 26m	22h 34m	22h 35m	22h 41m	22h 51m
	s	s	s	s	s	s	s	s
July 8.6	32.39 +3.02	9.90 + .27	1.28 + .28	54.69 + .31	29.31 + .29	17.75 +1.43	24.38 + .30	23.96 − .62
18.6	35.20 2.57	10.15 .23	1.54 .25	54.98 .27	29.58 .25	19.10 1.28	24.65 .25	23.40 .49
28.6	37.52 2.05	10.36 .19	1.77 .21	55.24 .22	29.82 .21	20.30 1.06	24.89 .20	22.97 .36
Aug. 7.6	39.29 1.48	10.53 .15	1.96 .16	55.43 .16	30.01 .17	21.25 .82	25.07 .16	22.68 .23
17.5	40.47 .86	10.65 .11	2.09 .11	55.56 .10	30.16 .12	21.94 .56	25.22 .12	22.49 − .09
27.5	41.00 + .20	10.74 + .07	2.18 + .07	55.63 + .05	30.24 + .06	22.38 + .29	25.32 + .08	22.48 + .05
Sept. 6.5	40.88 − .46	10.78 + .03	2.24 + .04	55.66 .00	30.28 + .01	22.52 − .01	25.38 + .04	22.61 .21
16.4	40.08 1.09	10.79 − .01	2.26 .00	55.62 − .06	30.27 − .03	22.36 .30	25.40 .00	22.91 .37
26.4	38.70 1.69	10.76 .04	2.24 − .04	55.53 .11	30.23 .07	21.92 .57	25.38 − .03	23.36 .53
Oct. 6.4	36.71 2.24	10.70 .07	2.18 .07	55.40 .15	30.13 .10	21.22 .81	25.33 .06	23.97 .67
16.4	34.21 −2.69	10.62 − .10	2.10 − .09	55.23 − .18	30.01 − .13	20.30 −1.02	25.25 − .09	24.70 + .81
26.3	31.33 3.05	10.51 .12	1.99 .11	55.03 .21	29.88 .15	19.18 1.20	25.14 .11	25.60 .95
Nov. 5.3	28.12 3.28	10.39 .12	1.88 .12	54.81 .23	29.72 .17	17.90 1.33	25.02 .12	26.60 1.06
15.3	24.77 3.37	10.27 .11	1.76 .12	54.56 .24	29.53 .18	16.53 1.40	24.89 .13	27.72 1.16
25.3	21.38 3.34	10.16 .11	1.64 .11	54.32 .25	29.36 .18	15.11 1.40	24.75 .14	28.93 1.23
Dec. 5.2	18.08 −3.18	10.05 − .10	1.53 − .10	54.07 − .24	29.18 − .18	13.72 −1.37	24.62 − .13	30.17 +1.26
15.2	15.03 −2.92	9.97 − .08	1.44 − .08	53.84 − .22	29.00 − .17	12.38 −1.30	24.50 − .11	31.44 +1.27

Mean Solar Date.	o Androm.	φ Aquarii.	τ Pegasi.	λ Androm.	i¹ Aquarii.	δ Sculptoris.	γ¹ Octantis.	33 Piscium.
	48° 15′	96° 38′	66° 51′	44° 7′	108° 52′	118° 43′	172° 37′	96° 18′
	22h 56m	23h 8m	23h 15m	23h 32m	23h 38m	23h 43m	23h 45m	23h 59m
	s	s	s	s	s	s	s	s
July 28.6	62.01 + .25	49.36 + .24	22.60 + .24	21.67 + .31	41.67 + .27	23.67 + .28	60.65 +1.46	53.75 + .28
Aug. 7.6	62.24 .20	49.58 .20	22.82 .20	21.95 .25	41.92 .23	24.13 .25	62.01 1.27	54.00 .24
17.6	62.41 .15	49.76 .16	23.00 .16	22.17 .20	42.13 .19	24.36 .21	63.18 1.03	54.22 .20
27.5	62.53 .10	49.89 .11	23.14 .12	22.35 .15	42.31 .15	24.55 .17	64.07 .76	54.40 .16
Sept. 6.5	62.61 + .05	49.98 .07	23.23 .08	22.47 .10	42.43 .11	24.70 .12	64.70 .47	54.55 .12
16.5	62.62 .00	50.04 + .04	23.28 + .04	22.54 + .05	42.53 + .07	24.79 + .07	65.00 + .16	54.65 + .09
26.5	62.61 − .04	50.06 + .01	23.31 .00	22.57 + .01	42.58 + .03	24.84 + .03	65.02 − .16	54.73 .05
Oct. 6.4	62.54 .09	50.05 − .02	23.29 − .03	22.56 − .04	42.59 − .01	24.86 − .01	64.69 .46	54.76 + .02
16.4	62.43 .12	50.01 .05	23.25 .06	22.49 .08	42.57 .04	24.83 .05	64.10 .74	54.76 − .01
26.4	62.30 .14	49.94 .08	23.17 .09	22.39 .12	42.52 .07	24.77 .08	63.20 1.01	54.74 .04
Nov. 5.3	62.15 − .16	49.85 − .10	23.07 − .11	22.26 − .15	42.44 − .09	24.68 − .10	62.07 −1.23	54.69 − .06
15.3	61.98 .18	49.74 .11	22.96 .12	22.10 .17	42.34 .10	24.57 .11	60.73 1.40	54.62 .08
25.3	61.79 .19	49.64 .11	22.83 .13	21.92 .19	42.23 .11	24.45 .12	59.27 1.51	54.54 .09
Dec. 5.3	61.60 .19	49.53 .10	22.71 .12	21.73 .20	42.12 .11	24.32 .13	57.71 1.58	54.44 .10
15.2	61.42 .18	49.43 .09	22.59 .12	21.53 .20	42.01 .11	24.19 .13	56.10 1.58	54.34 .10
25.2	61.24 − .18	49.35 − .08	22.47 − .11	21.33 − .20	41.90 − .11	24.06 − .13	54.54 −1.52	54.24 − .10
35.2	61.06 − .17	49.28 − .06	22.36 − .10	21.13 − .19	41.80 − .10	23.94 − .12	53.06 −1.41	54.14 − .09

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Jan. 1	18 50 23.09	23.85	−22 56 58.0	57.3	11.023	+13.34	+ 4 6.26	16 18.41	1 11.03	18 46 16.94
2	18 54 47.49	48.33	22 51 26.0	25.0	11.008	14.46	4 34.11	16 18.41	1 10.98	18 50 13.50
3	18 59 11.51	12.44	22 45 26.7	25.5	10.992	15.58	5 1.58	16 18.40	1 10.93	18 54 10.06
4	19 3 35.12	36.13	22 38 60.0	58.8	10.975	16.70	5 28.63	16 18.38	1 10.87	18 58 6.62
5	19 7 58.31	59.39	22 32 7.0	5.2	10.956	17.81	5 55.27	16 18.36	1 10.81	19 2 3.18
6	19 12 21.04	22.21	−22 24 47.1	45.1	10.937	+18.92	+ 6 21.45	16 18.33	1 10.74	19 5 59.74
7	19 16 43.31	44.54	22 16 60.6	58.3	10.917	20.02	6 47.16	16 18.29	1 10.67	19 9 56.30
8	19 21 5.07	6.39	22 8 48.0	45.4	10.896	21.10	7 12.38	16 18.25	1 10.61	19 13 52.85
9	19 25 26.31	27.70	22 0 9.2	6.4	10.873	22.18	7 37.08	16 18.21	1 10.53	19 17 49.41
10	19 29 47.00	48.45	21 51 4.7	1.7	10.850	23.25	8 1.19	16 18.15	1 10.45	19 21 45.97
11	19 34 7.13	8.64	−21 41 34.7	31.2	10.826	+24.31	+ 8 24.77	16 18.10	1 10.37	19 25 42.53
12	19 38 26.66	28.24	21 31 39.4	35.6	10.801	25.36	8 47.74	16 18.03	1 10.28	19 29 39.09
13	19 42 45.59	47.23	21 21 19.1	15.1	10.774	26.39	9 10.11	16 17.96	1 10.20	19 33 35.65
14	19 47 3.87	5.58	21 10 34.1	29.7	10.747	27.42	9 31.83	16 17.89	1 10.10	19 37 32.21
15	19 51 21.49	23.25	20 59 24.6	19.9	10.719	28.43	9 52.90	16 17.82	1 10.01	19 41 28.76
16	19 55 38.42	40.25	−20 47 51.1	46.0	10.690	+29.42	+10 13.28	16 17.75	1 9.92	19 45 25.32
17	19 59 54.66	56.53	20 35 53.7	48.3	10.660	30.41	10 32.95	16 17.67	1 9.82	19 49 21.88
18	20 4 10.17	12.11	20 23 33.1	27.4	10.629	31.37	10 51.90	16 17.58	1 9.72	19 53 18.44
19	20 8 24.94	26.91	20 10 49.3	43.2	10.598	32.32	11 10.12	16 17.49	1 9.62	19 57 14.99
20	20 12 38.95	40.98	19 57 42.8	36.4	10.568	33.27	11 27.57	16 17.40	1 9.52	20 1 11.55
21	20 16 52.18	54.24	−19 44 14.1	7.2	10.534	+34.18	+11 44.23	16 17.31	1 9.41	20 5 8.11
22	20 21 4.62	6.72	19 30 23.1	16.0	10.501	35.09	12 0.11	16 17.21	1 9.31	20 9 4.67
23	20 25 16.26	18.40	19 16 10.7	3.4	10.467	35.99	12 15.20	16 17.10	1 9.20	20 13 1.22
24	20 29 27.08	29.25	19 1 37.1	29.4	10.434	36.86	12 29.45	16 16.99	1 9.09	20 16 57.78
25	20 33 37.09	39.30	18 46 42.7	34.7	10.399	37.72	12 42.90	16 16.88	1 8.98	20 20 54.34
26	20 37 46.27	48.51	−18 31 28.0	19.6	10.364	+38.56	+12 55.52	16 16.77	1 8.87	20 24 50.89
27	20 41 54.62	56.89	18 15 53.1	44.4	10.329	39.39	13 7.31	16 16.65	1 8.75	20 28 47.45
28	20 46 2.14	4.43	17 59 58.6	49.8	10.295	40.20	13 18.25	16 16.52	1 8.64	20 32 44.01
29	20 50 8.83	11.14	17 43 45.1	35.7	10.260	41.00	13 28.38	16 16.39	1 8.53	20 36 40.57
30	20 54 14.69	17.02	17 27 12.5	2.9	10.226	41.76	13 37.69	16 16.25	1 8.41	20 40 37.12
31	20 58 19.71	22.07	−17 10 21.6	11.7	10.191	+42.53	+13 46.15	16 16.10	1 8.30	20 44 33.68
Feb. 1	21 2 23.91	26.27	16 53 12.5	2.5	10.157	43.27	13 53.79	16 15.95	1 8.18	20 48 30.23
2	21 6 27.30	29.67	16 35 45.9	35.5	10.123	44.00	14 0.61	16 15.80	1 8.07	20 52 26.79
3	21 10 29.88	32.25	16 17 61.8	51.3	10.090	44.71	14 6.62	16 15.64	1 7.95	20 56 23.35
4	21 14 31.65	34.07	15 59 61.0	50.2	10.056	45.41	14 11.83	16 15.48	1 7.84	21 0 19.90
5	21 18 32.62	35.00	−15 41 43.6	32.6	10.023	+46.08	+14 16.23	16 15.31	1 7.72	21 4 16.46
6	21 22 32.80	35.18	15 22 70.1	58.8	9.990	46.74	14 19.84	16 15.14	1 7.61	21 8 13.01
7	21 26 32.18	34.58	15 4 20.8	9.4	9.958	47.40	14 22.65	16 14.95	1 7.50	21 12 9.57
8	21 30 30.81	32.19	14 45 16.2	4.7	9.925	48.02	14 24.72	16 14.77	1 7.39	21 16 6.13
9	21 34 28.66	31.04	14 25 57.0	45.3	9.893	48.64	14 26.02	16 14.58	1 7.28	21 20 2.68
10	21 38 25.75	28.12	−14 6 22.6	10.8	9.862	+49.23	+14 26.53	16 14.39	1 7.17	21 23 59.24
11	21 42 22.07	24.44	13 46 34.6	22.5	9.830	49.80	14 26.30	16 14.19	1 7.06	21 27 55.79
12	21 46 17.65	20.01	13 26 32.8	20.6	9.799	50.36	14 25.37	16 14.00	1 6.95	21 31 52.35
13	21 50 12.51	14.84	13 6 17.7	5.5	9.769	50.91	14 23.59	16 13.80	1 6.84	21 35 48.91
14	21 54 6.61	8.94	12 45 49.8	37.5	9.739	51.43	14 21.15	16 13.59	1 6.74	21 39 45.46
15	21 57 59.97	2.31	−12 24 69.6	57.1	9.709	+51.94	+14 17.98	16 13.39	1 6.63	21 43 42.01
16	22 1 52.65	54.95	−12 4 17.3	4.9	9.679	+52.43	+14 14.07	16 13.18	1 6.53	21 47 38.57

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0^{s}.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Feb. 16	22 1 52.65	54.95	−12 4 17.3	4.9	9.679	+52.43	+14 14.07	16 13.18	1 6.53	21 47 38.57
17	22 5 44.62	46.89	11 43 13.5	1.0	9.650	52.90	14 9.47	16 12.98	1 6.43	21 51 35.13
18	22 9 35.88	38.14	11 21 58.7	46.1	9.621	53.35	14 4.19	16 12.77	1 6.33	21 55 31.68
19	22 13 26.44	28.68	11 0 33.3	20.7	9.592	53.78	13 58.18	16 12.56	1 6.23	21 59 28.23
20	22 17 16.34	18.54	10 38 57.6	45.0	9.564	54.20	13 51.51	16 12.34	1 6.14	22 3 24.79
21	22 21 5.57	7.75	−10 16 72.2	59.6	9.537	+54.59	+13 44.19	16 12.13	1 6.05	22 7 21.34
22	22 24 54.15	56.30	9 55 17.4	4.8	9.510	54 98	13 36.20	16 11.91	1 5.96	22 11 17.90
23	22 28 42.09	44.22	9 33 13.8	1.3	9.484	55.33	13 27.60	16 11.68	1 5.87	22 15 14.45
24	22 32 29.42	31.53	9 10 61.6	49.1	9.459	55.68	13 18.35	16 11.46	1 5.78	22 19 11.01
25	22 36 16.15	18.21	8 48 41.3	28.9	9.434	56.01	13 8.51	16 11.23	1 5.70	22 23 7.56
26	22 40 2.30	4.33	− 8 26 13.3	1.1	9.410	+56.32	+12 58.11	16 11.00	1 5.62	22 27 4.12
27	22 43 47.87	49.86	8 3 38.0	25.8	9.387	56.62	12 47.13	16 10.76	1 5.54	22 31 0.67
28	22 47 32.91	34.87	7 40 55.8	43.8	9.365	56.90	12 35.62	16 10.53	1 5.47	22 34 57.23
Mar. 1	22 51 17.42	19.35	7 17 67.1	55.2	9.344	57.16	12 23.56	16 10.29	1 5.40	22 38 53.78
2	22 55 1.44	3.33	6 55 12.2	0.4	9.323	57.41	12 11.03	16 10.04	1 5.33	22 42 50.33
3	22 58 44.98	46.83	− 6 32 11.6	0.0	9.304	+57.64	+11 58.01	16 9.80	1 5.26	22 46 46.89
4	23 2 28.06	29.88	6 8 65.4	53.9	9.286	57.86	11 44.54	16 9.54	1 5.19	22 50 43.44
5	23 6 10.72	12.50	5 45 54.1	42.9	9 268	58.06	11 30.65	16 9.29	1 5.13	22 54 39.99
6	23 9 52.97	54.70	5 22 38.1	27.2	9.252	58.26	11 16.33	16 9.03	1 5.07	22 58 36.55
7	23 13 34.82	36.52	4 59 17.9	7.1	9.236	58.43	11 1.64	16 8.77	1 5.01	23 2 33.10
8	23 17 16.31	17.96	− 4 35 53.5	43.0	9.222	+58.59	+10 46.57	16 8.50	1 4.95	23 6 29.66
9	23 20 57.46	59.07	4 12 25.6	15.3	9.208	58.73	10 31.16	16 8.23	1 4.90	23 10 26.21
10	23 24 38.29	39.85	3 48 54.4	44.3	9.195	58.86	10 15.45	16 7.97	1 4.85	23 14 22.76
11	23 28 18.81	20.34	3 25 20.2	10.4	9.182	58.97	9 59.40	16 7.70	1 4.81	23 18 19.32
12	23 31 59.03	60.52	3 1 43.6	34.0	9.170	59.07	9 43.09	16 7.42	1 4.76	23 22 15.87
13	23 35 39.00	40.43	− 2 37 64.8	55.5	9.160	+59.15	+ 9 26.51	16 7.15	1 4.72	23 26 12.42
14	23 39 18.72	20.11	2 14 24.3	15.3	9.150	59.21	9 9.66	16 6.88	1 4.68	23 30 8.98
15	23 42 58.21	59.56	1 50 42.4	33.5	9.141	59.26	8 52.61	16 6.61	1 4.65	23 34 5.53
16	23 46 37.49	38.79	1 26 59.5	51.0	9.132	59.29	8 35.33	16 6.34	1 4.62	23 38 2.09
17	23 50 16.57	17.83	1 3 16.0	7.8	9.124	59.31	8 17.87	16 6.07	1 4.59	23 41 58.64
18	23 53 55.48	56.70	− 0 39 32.3	24.4	9.117	+59.31	+ 8 0.22	16 5.80	1 4.57	23 45 55.19
19	23 57 34.21	35.38	− 0 15 48.8	41.2	9.111	59.30	7 42.40	16 5.52	1 4.55	23 49 51.75
20	0 1 12.81	13.93	+ 0 7 53.9	61.2	9.106	59.26	7 24.45	16 5.25	1 4.53	23 53 48.30
21	0 4 51.28	52.36	0 31 35.7	42.7	9.100	59.22	7 6.37	16 4.98	1 4.52	23 57 44.85
22	0 8 29.63	30.66	0 55 16.0	22.8	9.096	59.15	6 48.16	16 4.71	1 4.50	0 1 41.41
23	0 12 7.90	8.88	+ 1 18 54.8	61.2	9.093	+59.08	+ 6 29.90	16 4.46	1 4.49	0 5 37.96
24	0 15 46.09	47.03	1 42 31.3	37.4	9.091	58.97	6 11.53	16 4.17	1 4.48	0 9 34.51
25	0 19 24.23	25.12	2 6 5.3	11.2	9.089	58.85	5 53.11	16 3.90	1 4.48	0 13 31.07
26	0 23 2.33	3.17	2 29 36.5	42.0	9.088	58.73	5 34.68	16 3.63	1 4.48	0 17 27.62
27	0 26 40.43	41.23	2 53 4.5	9.6	9.087	58.59	5 16.22	16 3.36	1 4.48	0 21 24.17
28	0 30 18.53	19.28	+ 3 16 28.9	33.7	9.088	+58.43	+ 4 57.78	16 3.09	1 4.49	0 25 20.73
29	0 33 56.67	57.37	3 39 49.4	53.9	9.090	58.27	4 39.37	16 2.82	1 4.49	0 29 17.28
30	0 37 34.86	35.52	4 3 5.8	10.0	9.093	58.09	4 21.01	16 2.54	1 4.50	0 33 13.83
31	0 41 13.13	13.74	4 26 17.6	21.7	9.097	57.89	4 2.73	16 2.27	1 4.52	0 37 10.39
32	0 44 51.51	52.08	4 49 24.7	28.1	9.101	57.68	3 44.55	16 1.99	1 4.53	0 41 6.94
33	0 48 30.02	30.50	+ 5 12 26.3	29.7	9.107	+57.45	+ 3 26.49	16 1.71	1 4.55	0 45 3.50
34	0 52 8.63	9.11	+ 5 35 22.7	25.8	9.114	+57.21	+ 3 8.59	16 1.47	1 4.58	0 49 0.05

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Apr. 1	0 44 51.51	52.08	+ 4 49 24.7	28.1	9.101	+57.68	+3 44.55	16 1.99	1 4.53	0 41 6.94
2	0 48 30.02	30.50	5 12 26.3	29.7	9.107	57.45	3 26.49	16 1.71	1 4.55	0 45 3.50
3	0 52 8.63	9.11	5 35 22.7	25.8	9.114	57.21	3 8.59	16 1.47	1 4.58	0 49 0.05
4	0 55 47.44	47.87	5 58 13.2	16.0	9.122	56.97	2 50.83	16 1.16	1 4.60	0 52 56.60
5	0 59 26.44	26.83	6 20 57.7	60.1	9.129	56.71	2 33.28	16 0.88	1 4.63	0 56 53.16
6	1 3 5.65	6.00	+ 6 43 35.7	37.8	9.139	+56.43	+2 15.94	16 0.59	1 4.66	1 0 49.71
7	1 6 45.08	45.38	7 6 7.0	8.9	9.149	56.15	1 58.82	16 0.31	1 4.70	1 4 46.27
8	1 10 24.76	25.02	7 28 31.2	32.8	9.160	55.84	1 41.95	16 0.03	1 4.73	1 8 42.82
9	1 14 4.71	4.92	7 50 47.9	49.2	9.171	55.52	1 25.35	15 59.75	1 4.77	1 12 39.37
10	1 17 44.95	45.13	8 12 56.9	58.0	9.183	55.20	1 9.05	15 59.48	1 4.81	1 16 35.93
11	1 21 25.49	25.62	+ 8 34 57.7	58.6	9.196	+54.85	+0 53.05	15 59.20	1 4.85	1 20 32.48
12	1 25 6.32	6.41	8 56 50.2	50.7	9.210	54.49	0 37.35	15 58.92	1 4.89	1 24 29.04
13	1 28 47.52	47.57	9 18 33.8	34.0	9.224	54.11	0 21.96	15 58.65	1 4.94	1 28 25.59
14	1 32 29.03	29.05	9 40 8.1	8.2	9.238	53.72	+0 6.92	15 58.38	1 4.99	1 32 22.15
15	1 36 10.91	10.90	10 1 32.9	32.9	9.253	53.32	−0 7.76	15 58.11	1 5.04	1 36 18.70
16	1 39 53.15	53.10	+10 22 47.9	47.5	9.268	+52.90	−0 22.07	15 57.85	1 5.10	1 40 15.25
17	1 43 35.76	35.66	10 43 52.6	52.0	9.284	52.46	0 36.01	15 57.59	1 5.15	1 44 11.81
18	1 47 18.77	18.64	11 4 46.5	45.8	9.301	52.01	0 49.55	15 57.33	1 5.21	1 48 8.36
19	1 51 2.17	2.00	11 25 29.8	28.8	9.318	51.54	1 2.71	15 57.07	1 5.27	1 52 4.92
20	1 54 45.98	45.78	11 46 1.2	0.0	9.335	51.06	1 15.45	15 56.82	1 5.33	1 56 1.47
21	1 58 30.22	29.99	+12 6 21.2	19.9	9.353	+50.57	−1 27.77	15 56.57	1 5.40	1 59 58.03
22	2 2 14.87	14.62	12 26 29.0	27.6	9.371	50.05	1 39.66	15 56.32	1 5.46	2 3 54.58
23	2 5 59.98	59.69	12 46 24.5	23.0	9.390	49.53	1 51.12	15 56.07	1 5.53	2 7 51.14
24	2 9 45.53	45.21	13 6 7.4	5.7	9.409	49.00	2 2.11	15 55.82	1 5.60	2 11 47.69
25	2 13 31.52	31.19	13 25 37.3	35.5	9.428	48.45	2 12.65	15 55.58	1 5.67	2 15 44.25
26	2 17 18.04	17.67	+13 44 53.8	51.9	9.448	+47.88	−2 22.70	15 55.34	1 5.75	2 19 40.80
27	2 21 5.02	4.61	14 3 56.6	54.6	9.469	47.31	2 32.29	15 55.09	1 5.82	2 23 37.36
28	2 24 52.51	52.09	14 22 45.5	43.4	9.490	46.72	2 41.35	15 54.85	1 5.90	2 27 33.91
29	2 28 40.50	40.05	14 41 20.3	18.1	9.512	46.12	2 49.92	15 54.62	1 5.97	2 31 30.47
30	2 32 29.01	28.54	14 59 40.4	38.1	9.534	45.51	2 57.97	15 54.38	1 6.05	2 35 27.03
May 1	2 36 18.06	17.56	+15 17 45.7	43.4	9.556	+44.89	−3 5.47	15 54.14	1 6.13	2 39 23.58
2	2 40 7.65	7.14	15 35 36.0	33.6	9.580	44.25	3 12.44	15 53.90	1 6.21	2 43 20.14
3	2 43 57.81	57.27	15 53 10.9	8.4	9.603	43.61	3 18.84	15 53.67	1 6.29	2 47 16.69
4	2 47 48.52	47.98	16 10 30.1	27.6	9.626	42.95	3 24.69	15 53.44	1 6.37	2 51 13.25
5	2 51 39.80	39.24	16 27 33.3	30.8	9.650	42.27	3 29.92	15 53.21	1 6.45	2 55 9.81
6	2 55 31.67	31.09	+16 44 20.2	17.7	9.674	+41.59	−3 34.65	15 52.98	1 6.53	2 59 6.36
7	2 59 24.12	23.53	17 0 50.7	48.2	9.698	40.89	3 38.76	15 52.75	1 6.61	3 3 2.92
8	3 3 17.16	16.56	17 17 4.0	1.5	9.723	40.18	3 42.27	15 52.53	1 6.69	3 6 59.47
9	3 7 10.80	10.19	17 32 60.3	57.8	9.748	39.46	3 45.19	15 52.31	1 6.77	3 10 56.03
10	3 11 5.02	4.40	17 48 39.1	36.6	9.772	38.72	3 47.53	15 52.09	1 6.85	3 14 52.59
11	3 14 59.83	59.21	+18 3 60.1	57.6	9.797	+37.97	−3 49.28	15 51.88	1 6.93	3 18 49.14
12	3 18 55.25	54.61	18 19 3.0	0.6	9.822	37.21	3 50.43	15 51.67	1 7.02	3 22 45.70
13	3 22 51.23	50.60	18 33 47.5	45.2	9.846	36.44	3 51.01	15 51.46	1 7.10	3 26 42.26
14	3 26 47.80	47.17	18 48 13.3	10.9	9.870	35.65	3 50.98	15 51.25	1 7.18	3 30 38.81
15	3 30 44.96	44.33	19 2 20.0	17.7	9.894	34.85	3 50.39	15 51.06	1 7.26	3 34 35.37
16	3 34 42.67	42.03	+19 16 7.5	5.3	9.918	+34.04	−3 49.23	15 50.86	1 7.34	3 38 31.93
17	3 38 40.95	40.32	+19 29 35.3	33.2	9.941	+33.22	−3 47.51	15 50.68	1 7.42	3 42 28.49

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^s.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
May 17	3 38 40.95	40.32	+19 29 35.3	33.2	9.941	+33.22	−3 47.51	15 50.68	1 7.42	3 42 28.49
18	3 42 39.78	39.16	19 42 43.2	41.2	9.964	32.39	3 45.24	15 50.50	1 7.50	3 46 25.04
19	3 46 39.14	38.52	19 55 31.0	29.0	9.986	31.55	3 42.43	15 50.32	1 7.57	3 50 21.60
20	3 50 39.05	38.44	20 7 58.3	56.4	10.008	30.68	3 39.10	15 50.14	1 7.65	3 54 18.16
21	3 54 39.47	38.87	20 20 4.9	3.1	10.029	29.81	3 35.23	15 49.97	1 7.72	3 58 14.72
22	3 58 40.41	39.82	+20 31 50.6	48.8	10.050	+28.93	−3 30.84	15 49.80	1 7.80	4 2 11.27
23	4 2 41.84	41.26	20 43 15.1	13.6	10.071	28.04	3 25.97	15 49.64	1 7.87	4 6 7.83
24	4 6 43.78	43.22	20 54 18.2	16.7	10.091	27.15	3 20.59	15 49.48	1 7.94	4 10 4.39
25	4 10 46.19	45.65	21 4 59.7	58.2	10.111	26.25	3 14.74	15 49.32	1 8.01	4 14 0.95
26	4 14 49.08	48.56	21 15 19.4	18.0	10.131	25.33	3 8.41	15 49.16	1 8.08	4 17 57.50
27	4 18 52.43	51.92	+21 25 17.0	15.7	10.150	+24.41	−3 1.62	15 49.01	1 8.14	4 21 54.06
28	4 22 56.25	55.75	21 34 52.4	51.2	10.169	23.48	2 54.37	15 48.87	1 8.21	4 25 50.62
29	4 27 0.49	0.02	21 44 5.5	4.5	10.187	22.54	2 46.68	15 48.72	1 8.27	4 29 47.18
30	4 31 5.16	4.72	21 52 55.9	54.9	10.205	21.60	2 38.55	15 48.58	1 8.33	4 33 43.74
31	4 35 10.27	9.85	22 1 23.6	22.7	10.222	20.64	2 30.01	15 48.44	1 8.39	4 37 40.29
June 1	4 39 15.79	15.39	+22 9 28.3	27.6	10.239	+19.68	−2 21.05	15 48.30	1 8.45	4 41 36.85
2	4 43 21.68	21.33	22 17 10.0	9.3	10.255	18.72	2 11.69	15 48.17	1 8.50	4 45 33.41
3	4 47 28.01	27.66	22 24 28.4	27.8	10.271	17.75	2 1.95	15 48.04	1 8.55	4 49 29.97
4	4 51 34.67	34.34	22 31 23.4	22.9	10.286	16.77	1 51.84	15 47.91	1 8.60	4 53 26.53
5	4 55 41.60	41.40	22 37 54.9	54.5	10.299	15.79	1 41.38	15 47.78	1 8.65	4 57 23.09
6	4 59 49.05	48.79	+22 44 2.7	2.2	10.313	+14.80	−1 30.58	15 47.66	1 8.69	5 1 19.65
7	5 3 56.73	56.51	22 49 46.5	46.2	10.326	13.80	1 19.45	15 47.54	1 8.73	5 5 16.20
8	5 8 4.72	4.53	22 55 6.4	6.1	10.339	12.80	1 8.03	15 47.42	1 8.77	5 9 12.76
9	5 12 12.96	12.80	23 0 2.1	2.0	10.349	11.79	0 56.34	15 47.32	1 8.80	5 13 9.32
10	5 16 21.45	21.34	23 4 33.7	33.5	10.359	10.78	0 44.39	15 47.22	1 8.83	5 17 5.88
11	5 20 30.20	30.11	+23 8 40.9	40.8	10.368	+ 9.77	−0 32.22	15 47.12	1 8.86	5 21 2.44
12	5 24 39.15	39.10	23 12 23.5	23.4	10.377	8.75	0 19.82	15 47.02	1 8.88	5 24 59.00
13	5 28 48.27	48.25	23 15 41.6	41.5	10.383	7.72	−0 7.25	15 46.93	1 8.90	5 28 55.55
14	5 32 57.53	57.56	23 18 35.2	35.2	10.389	6.70	+0 5.46	15 46.85	1 8.92	5 32 52.11
15	5 37 6.93	6.98	23 21 3.8	3.8	10.394	5.65	0 18.29	15 46.77	1 8.93	5 36 48.67
16	5 41 16.42	16.51	+23 23 8.0	8.0	10.397	+ 4.62	+0 31.22	15 46.70	1 8.95	5 40 45.23
17	5 45 25.98	26.11	23 24 47.3	47.3	10.399	3.58	0 44.22	15 46.64	1 8.96	5 44 41.79
18	5 49 35.58	35.75	23 26 1.7	1.7	10.400	2.55	0 57.27	15 46.58	1 8.97	5 48 38.35
19	5 53 45.20	45.40	23 26 51.4	51.4	10.401	1.52	1 10.33	15 46.52	1 8.97	5 52 34.91
20	5 57 54.81	55.04	23 27 16.1	16.1	10.400	+ 0.48	1 23.38	15 46.47	1 8.97	5 56 31.47
21	6 2 4.38	4.65	+23 27 16.0	16.0	10.397	− 0.55	+1 36.40	15 46.43	1 8.97	6 0 28.03
22	6 6 13 88	14.20	23 26 51.2	51.2	10.394	1.58	1 49.35	15 46.38	1 8.96	6 4 24.58
23	6 10 23.31	23.66	23 26 1.5	1.4	10.391	2.61	2 2.22	15 46.35	1 8.95	6 8 21.14
24	6 14 32.64	33.03	23 24 47.1	46.9	10.386	3.65	2 14.99	15 46.31	1 8.94	6 12 17.70
25	6 18 41.83	42.26	23 23 6.0	7.8	10.380	4.68	2 27.62	15 46.28	1 8.92	6 16 14.26
26	6 22 50.89	51.35	+23 21 4.2	4.0	10.373	− 5.70	+2 40.12	15 46.26	1 8.90	6 20 10.82
27	6 26 59.77	60.28	23 18 36.0	35.6	10.366	6.72	2 52.44	15 46.24	1 8.88	6 24 7.38
28	6 31 8.47	8.99	23 15 43.1	42.7	10.358	7.74	3 4.58	15 46.22	1 8.85	6 28 3.94
29	6 35 16.96	17.53	23 12 25.9	25.5	10.349	8.76	3 16.53	15 46.20	1 8.82	6 32 0.50
30	6 39 25.24	25.83	23 8 44.3	43.8	10.340	9.77	3 28.25	15 46.19	1 8.79	6 35 57.05
31	6 43 33.27	33.90	+23 4 38.5	37.9	10.329	−10.78	+3 39.72	15 46.18	1 8.75	6 39 53.61
32	6 47 41.04	41.72	+23 0 8.6	7.9	10.318	−11.77	+3 50.95	15 46.17	1 8.71	6 43 50.17

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.19$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
July 1	6 43 33.27	33.90	+23 4 38.5	37.9	10.329	−10.78	+3 39.72	15 46.18	1 8.75	6 39 53.61
2	6 47 41.04	41.72	23 0 8.6	7.9	10.318	11.77	3 50.95	15 46.17	1 8.71	6 43 50.17
3	6 51 48.56	49.24	22 55 14.5	13.7	10.306	12.75	4 1.88	15 46.16	1 8.67	6 47 46.73
4	6 55 55.78	56.49	22 49 56.4	55.6	10.294	13.74	4 12.54	15 46.16	1 8.63	6 51 43.29
5	7 0 2.69	3.43	22 44 14.8	13.7	10.281	14.73	4 22.90	15 46.17	1 8.58	6 55 39.85
6	7 4 9.26	10.04	+22 38 9.3	8.2	10.266	−15.71	+4 32.91	15 46.18	1 8.53	6 59 36.41
7	7 8 15.49	16.30	22 31 40.2	38.9	10.251	16.69	4 42.59	15 46.19	1 8.48	7 3 32.97
8	7 12 21.36	22.18	22 24 47.8	46.3	10.236	17.66	4 51.90	15 46.21	1 8.42	7 7 29.52
9	7 16 26.83	27.69	22 17 32.0	30.2	10.219	18.63	5 0.81	15 46.23	1 8.37	7 11 26.08
10	7 20 31.90	32.78	22 9 53.2	51.4	10.202	19.59	5 9.33	15 46.26	1 8.31	7 15 22.64
11	7 24 36.55	37.45	+22 1 51.5	49.7	10.184	−20.55	+5 17.41	15 46.29	1 8.25	7 19 19.20
12	7 28 40.76	41.67	21 53 26.7	24.7	10.165	21.49	5 25.06	15 46.33	1 8.18	7 23 15.76
13	7 32 44.51	45.44	21 44 39.8	37.7	10.145	22.42	5 32.26	15 46.38	1 8.12	7 27 12.31
14	7 36 47.76	48.72	21 35 30.3	28.1	10.125	23.35	5 38.95	15 46.43	1 8.05	7 31 8.87
15	7 40 50.52	51.48	21 25 58.7	56.5	10.104	24.27	5 45.14	15 46.48	1 7.98	7 35 5.43
16	7 44 52.76	53.73	+21 16 5.2	2.9	10.082	−25.18	+5 50.82	15 46.55	1 7.90	7 39 1.99
17	7 48 54.48	55.47	21 5 50.3	47.7	10.059	26.07	5 55.98	15 46.62	1 7.83	7 42 58.55
18	7 52 55.64	56.64	20 55 13.7	11.1	10.036	26.95	6 0.58	15 46.69	1 7.75	7 46 55.10
19	7 56 56.23	57.25	20 44 16.0	13.2	10.014	27.83	6 4.63	15 46.77	1 7.67	7 50 51.69
20	8 0 56.27	57.29	20 32 57.4	54.4	9.988	28.70	6 8.09	15 46.85	1 7.59	7 54 48.22
21	8 4 55.73	56.76	+20 21 18.1	15.1	9.964	−29.56	+6 10.99	15 46.93	1 7.51	7 58 44.78
22	8 8 54.58	55.61	20 9 18.4	15.3	9.940	30.40	6 13.29	15 47.02	1 7.43	8 2 41.33
23	8 12 52.85	53.88	19 56 58.5	55.4	9.915	31.23	6 15.00	15 47.12	1 7.35	8 6 37.89
24	8 16 50.53	51.56	19 44 18.8	15.5	9.890	32.06	6 16.10	15 47.22	1 7.27	8 10 34.45
25	8 20 47.60	48.63	19 31 19.4	16.1	9.865	32.87	6 16.62	15 47.32	1 7.19	8 14 31.01
26	8 24 44.06	45.10	+19 17 60.7	57.3	9.840	−33.67	+6 16.53	15 47.43	1 7.10	8 18 27.57
27	8 28 39.93	40.96	19 4 23.0	19.4	9.814	34.46	6 15.84	15 47.54	1 7.02	8 22 24.12
28	8 32 35.19	36.21	18 50 26.4	22.7	9.789	35.24	6 14.53	15 47.65	1 6.93	8 26 20.68
29	8 36 29.85	30.86	18 36 11.1	7.4	9.764	36.01	6 12.63	15 47.76	1 6.85	8 30 17.24
30	8 40 23.91	24.91	18 21 37.5	33.8	9.739	36.78	6 10.16	15 47.88	1 6.76	8 34 13.79
31	8 44 17.38	18.37	+18 6 46.0	42.2	9.715	−37.51	+6 7.05	15 48.00	1 6.67	8 38 10.35
Aug. 1	8 48 10.25	11.23	17 51 36.6	32.8	9.690	38.25	6 3.35	15 48.12	1 6.59	8 42 6.91
2	8 52 2.53	3.50	17 36 9.7	5.8	9.665	38.96	5 59.09	15 48.24	1 6.50	8 46 3.46
3	8 55 54.22	55.18	17 20 25.5	21.6	9.641	39.69	5 54.22	15 48.37	1 6.41	8 50 0.02
4	8 59 45.34	46.28	17 4 24.4	20.5	9.617	40.39	5 48.77	15 48.50	1 6.33	8 53 56.58
5	9 3 35.88	36.80	+16 48 6.5	2.6	9.593	−41.08	+5 42.77	15 48.64	1 6.24	8 57 53.13
6	9 7 25.84	26.73	16 31 32.3	28.4	9.569	41.76	5 36.15	15 48.78	1 6.16	9 1 49.69
7	9 11 15.23	16.10	16 14 42.0	38.1	9.545	42.43	5 28.98	15 48.93	1 6.07	9 5 46.25
8	9 15 4.04	4.89	15 57 35.8	32.0	9.521	43.07	5 21.25	15 49.08	1 5.99	9 9 42.80
9	9 18 52.28	53.11	15 40 14.3	10.5	9.497	43.71	5 12.93	15 49.23	1 5.90	9 13 39.36
10	9 22 39.97	40.77	+15 22 37.6	33.9	9.474	−44.34	+5 4.05	15 49.39	1 5.82	9 17 35.91
11	9 26 27.10	27.87	15 4 40.0	42.3	9.451	44.94	4 51.63	15 49.55	1 5.74	9 21 32.47
12	9 30 13.66	14.40	14 46 39.8	36.3	9.428	45.54	4 44.63	15 49.72	1 5.66	9 25 29.03
13	9 33 59.67	0.38	14 28 19.4	15.9	9.405	46.13	4 34.09	15 49.89	1 5.58	9 29 25.58
14	9 37 45.12	45.80	14 9 45.3	41.9	9.382	46.70	4 22.98	15 50.07	1 5.50	9 33 22.14
15	9 41 30.04	30.69	+13 50 57.7	54.4	9.360	−47.25	+4 11.35	15 50.25	1 5.42	9 37 18.69
16	9 45 14.42	15.04	+13 31 56.8	53.6	9.338	−47.80	+3 59.17	15 50.44	1 5.35	9 41 15.25

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Aug. 16	9 45 14.42	15.04	+13 31 56.8	53.6	9.338	−47.80	+3 59.17	15 50.44	1 5.35	9 41 15.25
17	9 48 58.27	58.85	13 12 43.1	40.1	9.316	48.33	3 46.46	15 50.63	1 5.28	9 45 11.81
18	9 52 41.60	42.15	12 53 16.9	14.0	9.294	48.84	3 33.24	15 50.83	1 5.21	9 49 8.36
19	9 56 24.43	24.94	12 33 38.5	35.9	9.274	49.34	3 19.51	15 51.03	1 5.14	9 53 4.92
20	10 0 6.76	7.24	12 13 48.4	45.9	9.253	49.83	3 5.28	15 51.23	1 5.07	9 57 1.47
21	10 3 48.60	49.04	+11 53 46.6	44.2	9.233	−50.29	+2 50.58	15 51.43	1 5.00	10 0 58.03
22	10 7 29.99	30.39	11 33 33.7	31.6	9.214	50.77	2 35.40	15 51.64	1 4.94	10 4 54.58
23	10 11 10.91	11.27	11 13 9.9	8.0	9.196	51.22	2 19.78	15 51.85	1 4.87	10 8 51.14
24	10 14 51.40	51.72	10 52 35.5	33.7	9.178	51.65	2 3.72	15 52.06	1 4.81	10 12 47.69
25	10 18 31.46	31.73	10 31 50.8	49.4	9.161	52.07	1 47.22	15 52.27	1 4.75	10 16 44.25
26	10 22 11.12	11.33	+10 10 56.2	55.0	9.144	−52.47	+1 30.32	15 52.49	1 4.69	10 20 40.80
27	10 25 50.40	50.58	9 49 52.0	50.9	9.129	52.87	1 13.07	15 52.70	1 4.64	10 24 37.35
28	10 29 29.33	29.47	9 28 38.2	37.4	9.114	53.26	0 55.44	15 52.92	1 4.58	10 28 33.91
29	10 33 7.91	8.00	9 7 15.5	15.0	9.100	53.63	0 37.47	15 53.14	1 4.53	10 32 30.46
30	10 36 46.15	46.20	8 45 43.8	43.5	9.087	53.99	0 19.16	15 53.37	1 4.48	10 36 27.02
31	10 40 24.09	24.09	+ 8 24 3.7	3.7	9.074	−54.34	+0 0.56	15 53.59	1 4.44	10 40 23.57
Sept. 1	10 44 1.75	1.71	8 2 15.5	15.8	9.063	54.68	−0 18.36	15 53.82	1 4.39	10 44 20.13
2	10 47 39.13	39.04	7 40 19.2	19.9	9.053	54.99	0 37.51	15 54.05	1 4.35	10 48 16.68
3	10 51 16.27	16.13	7 18 15.5	16.4	9.043	55.30	0 56.93	15 54.28	1 4.31	10 52 13.24
4	10 54 53.17	52.98	6 56 4.4	5.5	9.033	55.60	1 16.57	15 54.51	1 4.28	10 56 9.79
5	10 58 29.85	29.61	+ 6 33 46.3	47.9	9.024	−55.89	−1 36.43	15 54.74	1 4.24	11 0 6.34
6	11 2 6.34	6.05	6 11 21.8	23.7	9.016	56.15	1 56.49	15 54.98	1 4.21	11 4 2.90
7	11 5 42.64	42.30	5 48 50.8	53.0	9.009	56.41	2 16.75	15 55.22	1 4.19	11 7 59.45
8	11 9 18.78	18.39	5 26 14.0	16.6	9.003	56.65	2 37.16	15 55.46	1 4.16	11 11 56.01
9	11 12 54.77	54.33	5 3 31.6	34.4	8.997	56.87	2 57.72	15 55.71	1 4.14	11 15 52.56
10	11 16 30.61	30.12	+ 4 40 44.0	47.1	8.990	−57.08	−3 18.42	15 55.96	1 4.12	11 19 49.11
11	11 20 6.35	5.80	4 17 51.4	54.9	8.986	57.28	3 39.24	15 56.21	1 4.11	11 23 45.67
12	11 23 41.96	41.36	3 54 54.3	58.2	8.982	57.46	4 0.16	15 56.47	1 4.09	11 27 42.22
13	11 27 17.50	16.85	3 31 53.2	57.3	8.979	57.62	4 21.19	15 56.73	1 4.08	11 31 38.78
14	11 30 52.96	52.26	3 8 48.2	52.8	8.977	57.78	4 42.26	15 57.00	1 4.07	11 35 35.33
15	11 34 28.37	27.62	+ 2 45 39.8	44.7	8.975	−57.92	−5 3.40	15 57.26	1 4.07	11 39 31.88
16	11 38 3.74	2.92	2 22 28.2	33.5	8.974	58.03	5 24.59	15 57.53	1 4.06	11 43 28.44
17	11 41 39.09	38.23	1 59 14.0	19.6	8.973	58.14	5 45.78	15 57.80	1 4.07	11 47 24.99
18	11 45 14.44	13.53	1 35 57.4	63.3	8.973	58.24	6 6.97	15 58.07	1 4.07	11 51 21.54
19	11 48 49.82	48.85	1 12 38.7	45.0	8.975	58.31	6 28.16	15 58.35	1 4.08	11 55 18.10
20	11 52 25.24	24.22	+ 0 49 18.4	25.1	8.977	−58.40	−6 49.28	15 58.62	1 4.09	11 59 14.65
21	11 55 60.71	59.64	0 25 56.6	63.6	8.980	58.43	7 10.36	15 58.89	1 4.10	12 3 11.21
22	11 59 36.25	35.16	+ 0 2 33.8	41.2	8.984	58.47	7 31.33	15 59.17	1 4.12	12 7 7.76
23	12 3 11.97	10.79	− 0 20 49.8	42.1	8.989	58.49	7 52.20	15 59.44	1 4.14	12 11 4.31
24	12 6 47.78	46.55	0 44 13.8	5.8	8.996	58.50	8 12.94	15 59.72	1 4.16	12 15 0.87
25	12 10 23.75	22.47	− 1 7 37.8	29.5	9.003	−58.50	−8 33.51	15 59.99	1 4.19	12 18 57.42
26	12 13 59.89	58.55	1 30 61.7	53.0	9.011	58.48	8 53.93	16 0.26	1 4.22	12 22 53.97
27	12 17 36.25	34.86	1 54 25.0	16.1	9.020	58.45	9 14.12	16 0.54	1 4.25	12 26 50.53
28	12 21 12.84	11.40	2 17 47.6	38.3	9.030	58.41	9 34.08	16 0.81	1 4.28	12 30 47.08
29	12 24 49.67	48.18	2 40 68.9	59.2	9.041	58.36	9 53.79	16 1.08	1 4.32	12 34 43.63
30	12 28 26.79	25.25	− 3 4 28.7	18.8	9.053	−58.28	−10 13.22	16 1.35	1 4.36	12 38 40.19
31	12 32 4.20	2.61	− 3 27 46.7	36.6	9.066	−58.20	−10 32.37	16 1.62	1 4.40	12 42 36.74

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0s.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Oct. 1	12 32 4.20	2.61	− 3 27 46.7	36.6	9.066	−58.20	−10 32.37	16 1.62	1 4.40	12 42 36.74
2	12 35 41.93	40.29	3 50 62.7	52.1	9.080	58.09	10 51.19	16 1.89	1 4.45	12 46 33.29
3	12 39 20.01	18.32	4 14 16.0	5.2	9.095	57.99	11 9.67	16 2.16	1 4.49	12 50 29.85
4	12 42 58.45	56.71	4 37 26.5	15.4	9.110	57.87	11 27.78	16 2.44	1 4.55	12 54 26.40
5	12 46 37.26	35.47	5 0 33.6	22.3	9.126	57.73	11 45.53	16 2.71	1 4.60	12 58 22.96
6	12 50 16.48	14.64	− 5 23 37.2	25.6	9.143	−57.56	−12 2.86	16 2.98	1 4.66	13 2 19.51
7	12 53 56.10	54.22	5 46 36.7	25.0	9.161	57.39	12 19.78	16 3.25	1 4.72	13 6 16.06
8	12 57 36.17	34.24	6 9 31.9	19.9	9.180	57.20	12 36.28	16 3.53	1 4.78	13 10 12.62
9	13 1 16.68	14.71	6 32 22.2	10.0	9.199	56.98	12 52.32	16 3.80	1 4.85	13 14 9.17
10	13 4 57.66	55.64	6 54 67.3	55.0	9.218	56.76	13 7.90	16 4.08	1 4.92	13 18 5.73
11	13 8 39.11	37.06	− 7 17 46.9	34.5	9.238	−56.53	−13 22.99	16 4.36	1 4.99	13 22 2.28
12	13 12 21.07	18.97	7 40 20.5	7.7	9.259	56.26	13 37.59	16 4.64	1 5.07	13 25 58.83
13	13 16 3.54	1.39	8 2 47.6	34.6	9.281	55.99	13 51.69	16 4.92	1 5.15	13 29 55.39
14	13 19 46.53	44.34	8 24 67.9	54.8	9.304	55.69	14 5.30	16 5.20	1 5.23	13 33 51.94
15	13 23 30.06	27.84	8 47 20.8	7.7	9.327	55.38	14 18.28	16 5.48	1 5.31	13 37 46.50
16	13 27 14.16	11.90	− 9 9 26.3	12.9	9.350	−55.06	−14 30.74	16 5.76	1 5.39	13 41 45.05
17	13 30 58.83	56.53	9 31 22.7	9.3	9.374	54.72	14 42.64	16 6.03	1 5.48	13 45 41.61
18	13 34 44.08	41.75	9 52 72.7	59.1	9.399	54.36	14 53.94	16 6.31	1 5.57	13 49 38.16
19	13 38 29.94	27.58	10 14 52.8	39.3	9.425	53.98	15 4.63	16 6.59	1 5.66	13 53 34.71
20	13 42 16.41	14.02	10 36 23.9	10.3	9.452	53.60	15 14.72	16 6.86	1 5.76	13 57 31.27
21	13 46 3.56	1.13	−10 57 45.4	31.8	9.479	−53.19	−15 24.13	16 7.14	1 5.85	14 1 27.82
22	13 49 51.34	48.87	11 18 57.1	43.5	9.506	52.77	15 32.92	16 7.41	1 5.95	14 5 24.38
23	13 53 39.81	37.31	11 39 58.2	44.4	9.535	52.34	15 41.01	16 7.67	1 6.05	14 9 20.93
24	13 57 28.96	26.43	12 0 48.9	35.2	9.564	51.88	15 48.42	16 7.94	1 6.15	14 13 17.49
25	14 1 18.83	16.29	12 21 28.5	14.9	9.594	51.41	15 55.11	16 8.20	1 6.25	14 17 14.04
26	14 5 9.42	6.85	−12 41 56.7	43.1	9.625	−50.93	−16 1.09	16 8.46	1 6.36	14 21 10.60
27	14 8 60.78	58.18	13 1 73.2	59.7	9.657	50.43	16 6.29	16 8.71	1 6.47	14 25 7.15
28	14 12 52.89	50.28	13 22 17.6	4.1	9.689	49.92	16 10.75	16 8.97	1 6.57	14 29 3.71
29	14 16 45.78	43.14	13 41 69.3	56.1	9.721	49.38	16 14.42	16 9.22	1 6.69	14 33 0.27
30	14 20 39.43	36.79	14 1 48.1	34.8	9.754	48.84	16 17.31	16 9.47	1 6.80	14 36 56.82
31	14 24 33.94	31.28	−14 21 13.6	0.5	9.788	−48.28	−16 19.38	16 9.71	1 6.91	14 40 53.37
Nov. 1	14 28 29.24	26.56	14 40 25.4	12.4	9.822	47.70	16 20.66	16 9.95	1 7.02	14 44 49.93
2	14 32 25.35	22.67	14 59 24.0	11.1	9.857	47.10	16 21.11	16 10.20	1 7.13	14 48 46.49
3	14 36 22.31	19.62	15 17 67.0	54.4	9.892	46.48	16 20.71	16 10.43	1 7.26	14 52 43.04
4	14 40 20.10	17.40	15 36 34.0	21.6	9.927	45.85	16 19.49	16 10.67	1 7.37	14 56 39.60
5	14 44 18.73	16.03	−15 54 46.6	34.4	9.962	−45.21	−16 17.42	16 10.91	1 7.49	15 0 36.15
6	14 48 18.21	15.51	16 12 43.5	31.4	9.997	44.53	16 14.51	16 11.14	1 7.61	15 4 32.71
7	14 52 18.54	15.83	16 30 24.0	12.3	10.033	43.84	16 10.75	16 11.36	1 7.73	15 8 29.27
8	14 56 19.73	17.03	16 47 47.8	36.4	10.068	43.14	16 6.12	16 11.60	1 7.85	15 12 25.82
9	15 0 21.75	19.05	17 4 54.5	43.2	10.104	42.42	16 0.66	16 11.83	1 7.97	15 16 22.38
10	15 4 24.63	21.94	−17 21 43.7	32.6	10.139	−41.67	−15 54.34	16 12.06	1 8.09	15 20 18.93
11	15 8 28.34	25.66	17 38 15.0	4.3	10.174	40.92	15 47 20	16 12.29	1 8.20	15 24 15.49
12	15 12 32.90	30.24	17 54 27.6	17.1	10.209	40.16	15 39.21	16 12.51	1 8.32	15 28 12.05
13	15 16 38.29	35.64	18 10 21.5	11.4	10.243	39.36	15 30.39	16 12.73	1 8.44	15 32 8.61
14	15 20 44.51	41.88	18 25 56.2	46.4	10.277	38.54	15 20.74	16 12.95	1 8.56	15 36 5.16
15	15 24 51.56	48.95	−18 41 11.4	1.9	10.312	−37.73	−15 10.25	16 13.16	1 8.68	15 40 1.72
16	15 28 59.44	56.85	−18 55 66.5	57.4	10.346	−36.88	−14 58.95	16 13.38	1 8.79	15 43 58.28

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	m s	h m s
Nov. 16	15 28 59.44	56.85	−18 55 66.5	57.4	10.346	−36.88	−14 58.95	16 13.38	1 8.79	15 43 58.28
17	15 33 8.12	5.56	19 10 41.3	32.5	10.380	36.02	14 46.81	16 13.59	1 8.91	15 47 54.83
18	15 37 17.62	15.09	19 24 55.6	47.1	10.413	35.16	14 33.87	16 13.80	1 9.02	15 51 51.39
19	15 41 27.92	25.43	19 38 48.4	40.3	10.447	34.26	14 20.14	16 14.00	1 9.13	15 55 47.95
20	15 45 39.02	36.56	19 52 20.0	12.1	10.480	33.36	14 5.61	16 14.20	1 9.24	15 59 44.51
21	15 49 50.92	48.50	−20 5 29.7	22.3	10.513	−32.45	−13 50.32	16 14.38	1 9.35	16 3 41.06
22	15 54 3.60	1.22	20 18 17.5	10.4	10.546	31.52	13 34.15	16 14.57	1 9.46	16 7 37.62
23	15 58 17.07	14.73	20 30 42.6	35.8	10.578	30.58	13 17.25	16 14.76	1 9.57	16 11 34.18
24	16 2 31.29	28.98	20 42 45.1	38.7	10.610	29.63	12 59.58	16 14.94	1 9.67	16 15 30.74
25	16 6 46.28	44.02	20 54 24.4	18.4	10.642	28.66	12 41.16	16 15.11	1 9.78	16 19 27.29
26	16 10 62.01	59.82	−21 5 40.4	34.8	10.672	−27.67	−12 21.98	16 15.28	1 9.88	16 23 23.85
27	16 15 18.49	16.34	21 16 32.6	27.1	10.702	26.68	12 2.06	16 15.44	1 9.97	16 27 20.41
28	16 19 35.69	33.60	21 26 60.7	55.8	10.732	25.67	11 41.42	16 15.60	1 10.07	16 31 16.97
29	16 23 53.59	51.57	21 37 4.6	0.0	10.761	24.65	11 20.07	16 15.75	1 10.16	16 35 13.53
30	16 28 12.19	10.24	21 46 43.8	39.6	10.790	23.62	10 58.04	16 15.89	1 10.25	16 39 10.09
Dec. 1	16 32 31.45	29.56	−21 55 58.0	54.0	10.817	−22.59	−10 35.33	16 16.04	1 10.34	16 43 6.64
2	16 36 51.36	49.52	22 4 47.0	43.3	10.843	21.52	10 11.97	16 16.18	1 10.42	16 47 3.20
3	16 41 11.90	10.13	22 13 10.3	7.0	10.869	20.45	9 47.99	16 16.31	1 10.50	16 50 59.76
4	16 45 33.03	31.33	22 21 8.0	4.9	10.894	19.37	9 23.41	16 16.45	1 10.57	16 54 56.32
5	16 49 54.74	53.12	22 28 40.0	37.3	10.916	18.27	8 58.26	16 16.58	1 10.65	16 58 52.88
6	16 54 16.99	15.43	−22 35 44.7	42.3	10.938	−17.17	− 8 32.56	16 16.70	1 10.72	17 2 49.43
7	16 58 39.75	38.29	22 42 23.3	21.1	10.959	16.06	8 6.35	16 16.82	1 10.78	17 6 45.99
8	17 3 3.00	1.59	22 48 35.2	33.3	10.978	14.94	7 39.66	16 16.94	1 10.85	17 10 42.55
9	17 7 26.69	25.36	22 54 20.1	18.4	10.996	13.81	7 12.54	16 17.06	1 10.90	17 14 39.11
10	17 11 50.79	49.56	22 59 37.7	36.3	11.013	12.67	6 44.98	16 17.17	1 10.96	17 18 35.67
11	17 16 15.27	14.11	−23 4 28.0	26.8	11.027	−11.53	− 6 17.05	16 17.28	1 11.01	17 22 32.23
12	17 20 40.10	39.02	23 8 50.8	49.8	11.041	10.37	5 48.77	16 17.38	1 11.06	17 26 28.79
13	17 25 5.24	4.25	23 12 45.8	45.1	11.054	9.21	5 20.20	16 17.48	1 11.10	17 30 25.35
14	17 29 30.65	29.76	23 16 13.1	12.4	11.064	8.05	4 51.33	16 17.58	1 11.14	17 34 21.91
15	17 33 56.30	55.49	23 19 12.5	12.0	11.073	6.90	4 22.22	16 17.67	1 11.17	17 38 18.46
16	17 38 22.16	21.45	−23 21 43.8	43.6	11.081	− 5.73	− 3 52.91	16 17.76	1 11.20	17 42 15.02
17	17 42 48.20	47.57	23 23 47.1	46.9	11.087	4.56	3 23.42	16 17.85	1 11.22	17 46 11.58
18	17 47 14.37	13.84	23 25 22.3	22.1	11.093	3.38	2 53.80	16 17.92	1 11.24	17 50 8.14
19	17 51 40.66	40.22	23 26 29.3	29.2	11.097	2.21	2 24.06	16 17.99	1 11.25	17 54 4.70
20	17 56 7.03	6.68	23 27 8.0	7.9	11.099	− 1.03	1 54.24	16 18.05	1 11.27	17 58 1.26
21	18 0 33.45	33.19	−23 27 18.5	18.5	11.101	+ 0.14	− 1 24.37	16 18.11	1 11.27	18 1 57.82
22	18 4 59.88	59.71	23 27 0.8	0.8	11.101	1.32	0 54.49	16 18.17	1 11.28	18 5 54.38
23	18 9 26.30	26.23	23 26 14.8	14.8	11.100	2.50	− 0 24.61	16 18.22	1 11.27	18 9 50.94
24	18 13 52.68	52.70	23 25 1.1	1.1	11.097	3.67	+ 0 5.21	16 18.26	1 11.27	18 13 47.50
25	18 18 19.00	19.11	23 23 18.2	18.2	11.094	4.85	0 34.98	16 18.29	1 11.26	18 17 44.05
26	18 22 45.21	45.41	−23 21 7.6	7.4	11.089	+ 6.02	+ 1 4.65	16 18.31	1 11.24	18 21 40.61
27	18 27 11.28	11.57	23 18 28.9	28.7	11.083	7.19	1 34.17	16 18.33	1 11.21	18 25 37.17
28	18 31 37.20	37.58	23 15 22.2	21.9	11.076	8.35	2 3.54	16 18.35	1 11.18	18 29 33.73
29	18 36 2.93	3.41	23 11 47.4	47.0	11.067	9.52	2 32.72	16 18.36	1 11.15	18 33 30.29
30	18 40 28.43	28.99	23 7 44.9	44.4	11.056	10.68	3 1.67	16 18.37	1 11.12	18 37 26.85
31	18 44 53.67	54.32	−23 3 14.6	13.8	11.045	+11.83	+ 3 30.36	16 18.37	1 11.08	18 41 23.41
32	18 49 18.63	19.37	−22 58 16.8	15.9	11.033	+12.98	+ 3 58.77	16 18.36	1 11.04	18 45 19.97

NOTE.– For mean time interval of semidiameter passing meridian, subtract $0^{s}.19$ from the sidereal interval.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Jan. 0	10 38.50	2.698	5 22 35.48	171.90	+26 48 57.6	+292.7	77.43	16 29.4	60 24.5	I. N.
1	11 43.67	2.712	6 31 52.55	173.05	27 41 39.8	− 30.4	77.67	16 24.3	60 6.1	I. N.
2	12 47.56	2.590	7 39 53.27	165.73	26 27 4.2	−335.1	75.93	16 15.1	59 32.4	II. N.
3	13 47.31	2.377	8 43 44.53	152.97	23 21 58.6	−577.8	72.86	16 2.6	58 46.7	II. S.
4	14 41.60	2.146	9 42 7.53	139.06	18 55 8.4	−743.5	69.41	15 48.5	57 54.4	II. S.
5	15 30.64	1.948	10 35 14.46	126.99	+13 36 22.1	−839.9	66.30	15 33.9	57 0.6	II. S.
6	16 15.48	1.800	11 24 8.65	118.10	7 50 19.9	−882.5	63.93	15 19.9	56 9.7	II. S.
7	16 57.46	1.709	12 10 11.03	112.71	+ 1 55 23.5	−886.6	62.46	15 7.9	55 25.5	II. S.
8	17 37.94	1.672	12 54 43.04	110.53	− 3 55 0.2	−861.2	61.86	14 58.3	54 50.4	II. S.
9	18 18.19	1.687	13 39 0.95	111.45	− 9 30 18.1	−811.4	62.13	14 51.7	54 25.9	II. S.
10	18 59.35	1.748	14 24 14.39	115.11	−14 40 53.3	−737.4	63.14	14 48.0	54 12.3	II. S.
11	19 42.46	1.849	15 11 24.50	121.07	−19 16 32.0	−635.7	64.76	14 47.2	54 9.5	II. S.
12	20 28.29	1.972	16 1 18.50	128.59	−23 5 23.7	−509.6	66.74	14 49.2	54 16.7	II. S.
13	21 17.23	2.102	16 54 19.43	136.30	−25 53 53.4	−333.9	68.72	14 53.5	54 32.5	II. S.
14	22 9.05	2.207	17 50 13.43	142.72	−27 27 58.7	−131.6	70.29	14 59.8	54 55.4	II. N.
15	23 2.79	2.259	18 48 3.57	145.83	−27 36 1.6	+ 93.8	71.01	15 7.3	55 23.5	II. N.
16	23 57.00	2.246	19 46 21.31	145.00	−26 12 20.4	323.6	70.79	15 15.7	55 54.2	II. N.
18	0 50.17	2.177	20 43 36.74	140.85	−23 19 25.1	536.6	69.74	15 24.5	56 26.1	I. N.
19	1 41.31	2.063	21 38 50.32	135.18	−19 7 30.3	716.4	68.30	15 32.9	56 57.1	I. S.
20	2 30.19	1.995	22 31 47.84	129.82	−13 52 0.6	853.6	66.91	15 40.9	57 26.7	I. S.
21	3 17.26	1.935	23 22 56.24	126.29	− 7 50 41.6	+945.2	66.05	15 48.4	57 54.0	I. S.
22	4 3.45	1.939	0 13 11.49	125.51	− 1 21 55.6	991.1	65.90	15 55.1	58 18.9	I. S.
23	4 49.97	1.964	1 3 46.77	128.02	+ 5 15 34.7	988.3	66.65	16 1.3	58 41.4	I. S.
24	5 38.17	2.063	1 56 3.81	133.97	11 42 2.9	934.4	68.25	16 6.7	59 1.0	I. S.
25	6 29.40	2.211	2 51 22.45	143.02	17 35 23.1	821.5	70.60	16 11.0	59 16.9	I. S.
26	7 24.66	2.398	3 50 43.33	153.82	+22 30 25.0	+642.1	73.29	16 13.9	59 27.9	I. S.
27	8 24.13	2.553	4 54 18.03	163.58	26 0 10.3	396.4	75.61	16 15.1	59 32.0	I. S.
28	9 26.68	2.638	6 0 57.79	168.69	27 40 54.8	+102.1	76.74	16 13.9	59 27.5	I. N.
29	10 29.62	2.602	7 8 13.41	166.41	27 20 20.8	−202.6	76.14	16 9.8	59 12.9	I. N.
30	11 30.68	2.457	8 13 11.42	157.56	25 3 30.0	−472.7	73.94	16 3.0	58 47.9	I. N.
31	12 27.23	2.255	9 13 50.19	145.43	+21 10 48.6	−678.8	70.94	15 53.7	58 13.8	II. N.
Feb. 1	13 18.86	2.054	10 9 33.00	132.36	16 9 57.0	−814.2	67.86	15 42.7	57 33.2	II. S.
2	14 6.07	1.889	11 0 50.25	123.53	10 27 57.3	−886.5	65.27	15 30.8	56 49.5	II. S.
3	14 49.95	1.775	11 48 46.36	116.68	+ 4 27 19.5	−909.3	63.43	15 19.0	56 6.1	II. S.
4	15 31.72	1.713	12 34 36.22	112.98	− 1 34 33.3	−894.7	62.47	15 8.2	55 26.6	II. S.
5	16 12.63	1.702	13 19 34.05	112.32	− 7 24 17.7	−849.7	62.34	14 59.4	54 54.1	II. S.
6	16 53.83	1.736	14 4 49.36	114.41	−12 50 54.0	−779.1	62.98	14 52.9	54 30.3	II. S.
7	17 36.37	1.814	14 51 25.06	118.95	−17 44 9.3	−689.5	64.30	14 49.3	54 16.9	II. S.
8	18 21.11	1.918	15 40 13.88	125.38	−21 53 19.4	−558.0	66.07	14 48.7	54 14.6	II. S.
9	19 8.66	2.042	16 31 50.97	132.76	−25 6 25.8	−402.1	68.01	14 51.0	54 23.6	II. S.
10	19 59.12	2.158	17 26 23.17	139.69	−27 10 30.5	−213.3	69.77	14 56.4	54 43.0	II. S.
11	20 51.96	2.237	18 23 19.13	144.48	−27 53 17.3	+ 3.1	70.92	15 4.2	55 11.6	II. N.
12	21 46.06	2.260	19 21 30.80	145.87	−27 6 2.8	231.0	71.19	15 13.8	55 47.1	II. N.
13	22 40.01	2.225	20 19 32.70	143.76	−24 46 34.8	460.7	70.60	15 24.7	56 26.9	II. N.
14	23 32.58	2.151	21 16 12.38	139.99	−21 0 32.8	+663.9	69.41	15 35.8	57 7.8	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Feb. 14	23 32.58	2.151	21 16 12.38	139.29	−21 0 32.8	+663.9	69.41	15 35.8	57 7.8	II. N.
16	0 23.19	2.067	22 10 53.97	134.23	−16 0 32.7	828.7	68.06	15 46.2	57 46.4	I. S.
17	1 11.94	2.000	23 3 43.51	130.90	−10 3 56.3	945.9	67.02	15 55.4	58 20.1	I. S.
18	1 59.50	1.970	23 55 21.20	128.39	− 3 30 44.6	1010.9	66.59	16 2.7	58 46.7	I. S.
19	2 46.89	1.966	0 46 49.29	129.48	+ 3 17 39.3	1021.5	66.94	16 7.8	59 5.3	I. S.
20	3 35.35	2.059	1 39 21.21	133.72	+ 9 58 54.1	+974.7	68.14	16 10.7	59 15.7	I. S.
21	4 26.10	2.178	2 34 11.04	140.87	16 9 33.4	868.4	70.07	16 11.6	59 18.8	I. S.
22	5 20.13	2.328	3 32 18.31	149.92	21 24 59.4	698.2	72.39	16 10.7	59 15.9	I. S.
23	6 17.80	2.473	4 34 4.71	158.66	25 20 19.1	468.7	74.58	16 8.5	59 7.7	I. S.
24	7 18.42	2.563	5 38 47.95	164.11	27 33 42.6	+198.5	75.86	16 4.9	58 55.1	I. S.
25	8 20.08	2.567	6 44 34.79	163.69	+27 52 2.3	−100.6	75.72	16 0.5	58 38.3	I. N.
26	9 20.34	2.451	7 48 56.54	157.22	26 15 53.2	−373.8	74.06	15 54.8	58 17.3	I. N.
27	10 17.15	2.280	8 49 51.14	146.92	22 59 35.5	−597.8	71.43	15 47.9	57 52.4	I. N.
28	11 9.60	2.085	9 46 23.53	135.84	18 25 57.6	−759.8	68.56	15 40.1	57 23.3	I. N.
Mar. 1	11 57.86	1.933	10 38 43.11	126.15	12 59 53.0	−860.9	65.95	15 31.4	56 51.2	I. N.
2	12 42.72	1.813	11 27 38.79	118.95	+ 7 4 8.3	−909.7	63.99	15 22.1	56 17.5	II. N. S.
3	13 25.28	1.740	12 14 15.86	114.62	+ 0 57 53.8	−915.0	62.81	15 12.8	55 43.7	II. S.
4	14 6.67	1.714	12 59 42.66	113.07	− 5 3 6.1	−884.5	62.43	15 4.4	55 12.4	II. S.
5	14 47.98	1.732	13 45 4.71	114.19	−10 45 40.8	−823.3	62.79	14 57.1	54 45.8	II. S.
6	15 30.21	1.790	14 31 22.02	117.63	−15 58 8.8	−734.1	63.84	14 51.7	54 25.9	II. S.
7	16 14.21	1.879	15 19 25.98	122.97	−20 29 15.0	−616.8	65.42	14 48.7	54 14.6	II. S.
8	17 0.61	1.988	16 9 54.19	129.48	−24 7 27.8	−469.4	67.22	14 48.3	54 13.3	II. S.
9	17 49.67	2.097	17 3 1.96	136.05	−26 40 51.8	−298.4	68.98	14 50.9	54 23.0	II. S.
10	18 41.11	2.184	17 58 33.71	141.24	−27 57 56.6	− 98.7	70.32	14 56.6	54 43.9	II. N.
11	19 34.14	2.227	18 55 40.82	143.83	−27 49 29.0	+132.2	70.96	15 5.2	55 15.2	II. N.
12	20 27.59	2.218	19 53 12.98	143.38	−26 10 47.8	+359.5	70.76	15 16.2	55 55.7	II. N.
13	21 20.31	2.170	20 50 1.48	140.40	−23 3 21.3	574.1	69.94	15 29.0	56 43.1	II. N.
14	22 11.59	2.103	21 45 22.83	136.84	−18 34 58.4	768.1	68.82	15 42.7	57 33.2	II. N.
15	23 1.29	2.043	22 39 10.00	132.79	−12 58 51.6	911.2	67.81	15 56.2	58 22.6	II. N.
16	23 49.89	2.013	23 31 59.63	130.98	− 6 32 29.4	1011.9	67.31	16 8.0	59 6.2	II. N.
18	0 38.27	2.026	0 24 17.86	131.76	+ 0 23 10.5	+1056.3	67.51	16 17.2	59 39.9	I. S.
19	1 27.56	2.089	1 17 39.81	135.57	7 24 7.7	1037.3	68.55	16 22.9	60 0.8	I. S.
20	2 18.96	2.199	2 13 8.47	142.96	14 3 44.9	948.6	70.34	16 24.8	60 7.7	I. S.
21	3 13.46	2.342	3 11 44.08	150.80	19 53 38.9	768.9	72.61	16 23.1	60 1.1	I. S.
22	4 11.48	2.487	4 13 51.63	150.47	24 25 37.4	561.0	74.78	16 18.2	59 43.5	I. S.
23	5 12.41	2.576	5 18 54.01	164.94	+27 15 31.5	+302.4	76.15	16 11.2	59 17.7	I. S.
24	6 14.45	2.573	6 25 2.84	164.71	28 8 52.8	− 15.7	76.12	16 2.8	58 47.0	I. N.
25	7 15.14	2.470	7 29 50.69	158.36	27 5 22.7	−296.1	74.56	15 53.9	58 14.3	I. N.
26	8 12.41	2.298	8 31 12.88	148.07	24 18 28.4	−529.2	71.96	15 44.9	57 41.0	I. N.
27	9 5.27	2.110	9 28 10.20	136.76	20 9 51.2	−703.9	68.98	15 35.9	57 8.3	I. N.
28	9 53.84	1.943	10 20 48.76	128.79	+15 3 7.3	−830.6	66.28	15 27.4	56 36.8	I. N.
29	10 38.89	1.817	11 9 55.61	119.90	9 19 55.7	−887.5	64.15	15 19.1	56 6.6	I. N.
30	11 21.49	1.739	11 56 35.17	114.53	+ 3 18 49.7	−911.5	62.79	15 11.4	55 38.2	I. N.
31	12 2.77	1.707	12 41 55.07	112.60	− 2 44 25.0	−899.0	62.23	15 4.2	55 11.7	II. N.
32	12 43.79	1.717	13 27 0.07	113.95	− 8 35 59.2	−863.0	62.44	14 57.8	54 48.1	II. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Apr. 1	12 43.79	1.717	13 27 0.07	113.95	− 8 35 59.2	−853.5	62.44	14 57.8	54 48.1	II. S.
2	13 25.55	1.766	14 12 49.12	116.90	−14 3 11.7	−777.3	63.30	14 52.4	54 28.5	II. S.
3	14 8.89	1.847	15 0 12.80	121.08	−18 53 45.3	−670.5	64.71	14 48.6	54 14.3	II. S.
4	14 54.42	1.947	15 49 48.60	127.06	−22 55 24.2	−532.9	66.42	14 46.5	54 6.9	II. S.
5	15 42.43	2.051	16 41 53.65	132.39	−25 55 55.6	−366.0	68.19	14 46.7	54 7.6	II. S.
6	16 32.74	2.137	17 36 17.18	138.39	−27 43 55.8	−171.2	69.57	14 49.6	54 18.1	II. S.
7	17 24.67	2.183	18 32 18.04	141.22	−28 10 17.8	+ 41.4	70.34	14 55.2	54 38.6	II. N.
8	18 17.17	2.184	19 28 53.32	141.94	−27 9 56.2	250.3	70.37	15 3.7	55 9.8	II. N.
9	19 9.17	2.144	20 24 58.42	138.86	−24 42 53.7	472.7	69.73	15 15.0	55 51.1	II. N.
10	19 59.93	2.085	21 19 48.88	135.27	−20 54 20.2	698.1	68.75	15 28.5	56 40.9	II. N.
11	20 49.26	2.028	22 13 13.27	131.92	−15 53 41.9	+881.7	67.80	15 43.6	57 36.6	II. N.
12	21 37.52	1.999	23 5 33.69	130.10	− 9 53 56.9	999.3	67.25	15 59.2	58 33.9	II. N.
13	22 25.55	2.009	23 57 39.40	130.82	− 3 11 29.8	1043.2	67.38	16 13.9	59 27.6	II. N.
14	23 14.45	2.073	0 50 38.16	134.60	+ 3 53 6.0	1069.0	68.34	16 26.0	60 12.3	II. N.
16	0 5.51	2.169	1 45 46.67	141.61	10 54 27.7	1025.1	70.15	16 34.3	60 42.5	I. S.
17	0 59.93	2.349	2 44 17.19	151.94	+17 22 15.2	+900.1	72.61	16 37.7	60 55.0	I. S.
18	1 58.41	2.591	3 46 52.63	161.58	22 43 12.9	690.8	75.21	16 36.0	60 48.6	I. S.
19	3 0.63	2.649	4 53 12.27	169.98	26 25 26.0	410.8	77.13	16 29.5	60 25.0	I. S.
20	4 4.77	2.674	6 1 28.04	170.78	28 6 41.3	+ 93.6	77.55	16 19.7	59 48.5	I. S.
21	5 8.01	2.574	7 8 49.21	164.83	27 41 39.4	−212.7	76.18	16 7.5	59 4.1	I. N. S.
22	6 7.70	2.358	8 12 36.90	153.50	+25 23 1.8	−469.6	73.43	15 54.6	58 16.7	I. N.
23	7 2.45	2.174	9 11 27.43	140.67	21 34 40.6	−690.6	70.14	15 41.9	57 30.3	I. N.
24	7 52.24	1.981	10 5 19.40	129.04	16 42 48.2	−788.8	67.07	15 30.1	56 47.2	I. N.
25	8 37.90	1.833	10 55 3.41	120.14	11 10 33.2	−864.5	64.57	15 19.7	56 8.6	I. N.
26	9 20.64	1.736	11 41 51.13	114.36	+ 5 16 42.4	−898.4	62.88	15 10.6	55 35.2	I. N.
27	10 1.68	1.691	12 26 57.26	111.64	− 0 43 31.9	−897.4	62.06	15 3.0	55 6.9	I. N.
28	10 42.21	1.692	13 11 32.27	111.79	− 6 37 6.0	−865.3	62.02	14 56.5	54 43.6	I. N.
29	11 23.28	1.734	13 56 39.68	114.96	−12 11 49.9	−803.2	62.72	14 51.5	54 25.1	I. N.
30	12 5.80	1.819	14 43 14.16	118.87	−17 15 33.2	−710.3	64.02	14 47.8	54 11.2	II. S.
May 1	12 50.45	1.911	15 31 57.38	124.88	−21 35 38.3	−584.8	65.69	14 46.5	54 2.6	II. S.
2	13 37.61	2.017	16 23 11.09	131.22	−24 59 9.0	−437.6	67.42	14 44.6	53 59.8	II. S.
3	14 27.16	2.107	17 16 48.68	136.62	−27 13 46.8	−261.5	68.91	14 45.7	54 3.6	II. S.
4	15 18.45	2.160	18 12 11.16	139.78	−28 9 32.4	− 35.1	69.84	14 48.8	54 15.2	II. S.
5	16 10.42	2.162	19 8 14.37	139.96	−27 40 41.6	+179.1	69.92	14 54.2	54 35.3	II. N.
6	17 1.91	2.122	20 3 48.73	137.51	−25 46 55.1	387.5	69.33	15 2.2	55 4.6	II. N.
7	17 52.06	2.065	20 58 2.80	133.62	−22 33 1.3	+578.2	68.31	15 12.7	55 43.1	II. N.
8	18 40.58	1.989	21 50 38.29	129.55	−18 7 34.2	744.3	67.25	15 25.6	56 30.6	II. N.
9	19 27.74	1.946	22 41 52.11	126.96	−12 41 28.7	880.9	66.53	15 40.5	57 25.1	II. N.
10	20 14.30	1.942	23 32 30.20	126.79	− 6 27 32.4	982.3	66.44	15 56.5	58 23.8	II. N.
11	21 1.39	1.980	0 23 39.70	129.65	+ 0 18 51.8	1041.3	67.14	16 12.3	59 22.1	II. N.
12	21 50.35	2.088	1 16 41.93	136.14	+ 7 18 10.4	+1044.5	68.80	16 26.6	60 14.4	II. N.
13	22 42.62	2.265	2 13 3.18	146.14	14 4 50.5	975.3	71.33	16 37.5	60 54.5	II. N.
14	23 39.40	2.471	3 13 56.33	158.43	20 6 38.5	816.1	74.39	16 43.7	61 17.0	II. S.
16	0 41.12	2.684	4 19 45.72	170.16	24 46 56.3	568.8	77.20	16 44.1	61 18.4	I. S.
17	1 46.60	2.772	5 29 22.13	176.09	+27 32 16.5	+249.0	78.77	16 38.7	60 58.7	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
May 17	1 46.60	2.772	5 29 22.13	176.60	+27 32 15.5	+249.6	78.77	16 38.7	60 58.7	I. S.
18	2 52.97	2.733	6 39 51.85	174.31	28 3 55.6	− 89.0	78.29	16 28.5	60 21.2	I. S.
19	3 56.71	2.560	7 47 43.14	163.99	26 26 6.3	−389.6	75.89	16 15.0	59 31.4	I. N.
20	4 55.36	2.381	8 50 28.04	149.58	23 2 7.5	−617.0	72.39	15 59.7	58 35.5	I. N.
21	5 48.23	2.089	9 47 26.01	135.57	18 22 41.4	−768.1	68.83	15 44.5	57 39.5	I. N.
22	6 36.02	1.900	10 39 17.37	124.26	+12 56 4.0	−855.8	65.81	15 30.1	56 47.0	I. N.
23	7 19.98	1.771	11 27 19.04	116.47	7 4 27.6	−895.5	63.62	15 17.5	56 0.6	I. N.
24	8 1.53	1.699	12 12 55.57	112.15	+ 1 4 31.1	−899.0	62.36	15 7.0	55 21.7	I. N.
25	8 42.01	1.680	12 57 27.07	110.99	− 4 50 45.7	−872.8	61.96	14 58.5	54 50.8	I. N.
26	9 22.60	1.708	13 42 5.68	112.68	−10 30 5.3	−819.3	62.36	14 52.1	54 27.5	I. N.
27	10 4.35	1.775	14 27 54.10	116.72	−15 42 22.9	−737.3	63.46	14 47.7	54 11.2	I. N.
28	10 48.09	1.873	15 15 42.73	122.55	−20 15 49.1	−624.5	65.03	14 45.1	54 1.5	I. N.
29	11 34.37	1.983	16 6 3.28	129.18	−23 57 38.0	−479.1	66.79	14 44.0	53 57.6	I. S.
30	12 23.23	2.085	16 58 59.47	135.28	−26 34 50.2	−302.3	68.41	14 44.5	53 59.8	II. S.
31	13 14.15	2.151	17 53 59.83	139.29	−27 55 59.2	−100.4	69.49	14 46.7	54 7.4	II. S.
June 1	14 6.08	2.166	18 50 0.58	140.19	−27 53 36.7	+113.0	69.76	14 50.4	54 21.1	II. S.
2	14 57.72	2.129	19 45 43.80	137.94	−26 26 6.4	322.5	69.26	14 55.9	54 41.4	II. N.
3	15 47.97	2.055	20 40 4.05	133.53	−23 37 56.7	514.3	68.17	15 3.4	55 8.6	II. N.
4	16 36.31	1.973	21 32 28.83	128.57	−19 38 7.7	679.9	66.90	15 12.7	55 43.2	II. N.
5	17 22.82	1.906	22 23 3.90	124.61	−14 38 2.6	815.2	65.87	15 24.2	56 25.0	II. N.
6	18 8.15	1.876	23 12 27.49	122.79	− 8 50 3.5	+919.0	65.39	15 37.3	57 13.4	II. N.
7	18 53.32	1.895	0 1 41.52	123.93	− 2 27 24.8	987.7	65.69	15 51.7	58 6.3	II. N.
8	19 39.64	1.974	0 52 4.65	128.63	+ 4 14 42.1	1014.7	66.93	16 6.7	59 1.1	II. N.
9	20 28.59	2.116	1 45 6.44	137.17	10 57 6.9	986.9	69.12	16 20.7	59 53.1	II. N.
10	21 21.68	2.315	2 42 17.50	149.25	17 14 31.6	886.8	72.16	16 32.6	60 36.8	II. N.
11	22 20.05	2.547	3 44 45.52	163.14	+22 34 28.9	+697.2	75.51	16 40.7	61 6.4	II. N.
12	23 23.69	2.748	4 52 31.11	174.87	26 20 20.5	418.4	78.27	16 43.7	61 17.0	II. S.
14	0 30.74	2.818	6 3 41.45	179.40	28 0 44.6	+ 78.1	79.34	16 40.9	61 6.6	I. S.
15	1 37.61	2.798	7 14 41.58	174.01	27 23 4.8	−260.8	78.11	16 32.5	60 36.0	I. S.
16	2 40.70	2.514	8 21 53.35	161.14	24 39 52.5	−541.5	75.11	16 20.0	59 49.8	I. N.
17	3 37.99	2.260	9 23 17.19	145.85	+20 21 6.7	−737.6	71.37	16 4.7	58 53.8	I. N.
18	4 29.42	2.033	10 18 47.62	132.18	15 0 30.4	−853.2	67.87	15 48.7	57 54.8	I. N.
19	5 16.02	1.861	11 9 28.13	121.86	9 6 36.3	−907.3	65.12	15 33.0	56 57.6	I. N.
20	5 59.26	1.759	11 56 46.39	115.31	+ 3 0 38.0	−916.3	63.31	15 19.0	56 6.1	I. N.
21	6 40.61	1.709	12 42 10.63	112.29	− 3 2 2.4	−892.2	62.45	15 7.2	55 22.7	I. N.
22	7 21.41	1.705	13 27 1.65	112.47	− 8 49 34.2	−841.1	62.46	14 57.8	54 48.6	I. N.
23	8 2.84	1.753	14 12 30.68	115.38	−14 11 31.5	−764.3	63.24	14 51.2	54 23.9	I. N.
24	8 45.89	1.839	14 59 37.59	120.51	−18 57 18.1	−659.7	64.61	14 47.0	54 8.4	I. N.
25	9 31.30	1.946	15 49 6.01	127.00	−22 55 15.8	−524.8	66.30	14 45.0	54 1.3	I. N.
26	10 19.37	2.056	16 41 14.64	133.59	−25 52 50.1	−357.9	68.01	14 45.1	54 1.7	I. S.
27	11 9.83	2.142	17 35 47.36	138.73	−27 37 46.7	−162.7	69.31	14 46.9	54 8.6	I. S.
28	12 1.80	2.178	18 31 50.38	140.94	−28 0 38.8	+ 50.2	69.85	14 50.5	54 21.2	I. S.
29	12 53.95	2.157	19 28 4.52	139.68	−26 57 24.0	264.7	69.55	14 55.3	54 38.8	II. S.
30	13 44.98	2.089	20 23 11.55	135.55	−24 30 44.5	464.9	68.52	15 1.3	55 1.1	II. N.
31	14 34.06	1.999	21 16 20.52	130.12	−20 49 16.2	+637.5	67.13	15 8.5	55 27.7	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.		Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
		h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
July	1	14 34.06	1.999	21 16 20.52	130.12	−20 49 16.2	+637.5	67.13	15 8.5	55 27.7	II. N.
	2	15 20.98	1.913	22 7 19.99	125.09	−16 5 13.6	777.1	65.83	15 16.9	55 58.9	II. N.
	3	16 6.16	1.857	22 56 35.10	121.62	−10 32 14.9	882.0	64.97	15 26.8	56 34.6	II. N.
	4	16 50.48	1.844	23 44 58.14	120.81	− 4 24 18.9	951.6	64.79	15 37.5	57 14.1	II. N.
	5	17 35.11	1.884	0 33 39.97	123.26	+ 2 4 6.5	983.7	65.48	15 49.1	57 56.9	II. N.
	6	18 21.45	1.986	1 24 4.05	129.30	+ 8 36 46.6	+971.4	67.14	16 1.4	58 41.6	II. N.
	7	19 10.98	2.151	2 17 40.59	139.97	14 53 47.5	903.0	69.71	16 13.1	59 24.9	II. N.
	8	20 5.10	2.364	3 15 53.39	152.16	20 29 40.1	763.2	72.94	16 23.5	60 3.0	II. N.
	9	21 4.61	2.589	4 19 30.43	165.69	24 53 2.9	539.7	76.19	16 31.2	60 31.6	II. N.
	10	22 8.94	2.753	5 27 57.24	175.47	27 30 51.8	+238.8	78.45	16 35.2	60 46.0	II. S.
	11	23 15.62	2.777	6 38 45.48	176.93	+27 58 45.9	−100.9	78.76	16 34.4	60 42.8	II. S.
	13	0 20.98	2.647	7 48 14.62	169.15	26 12 55.9	−419.9	76.91	16 28.7	60 21.8	I. S.
	14	1 21.94	2.423	8 53 18.97	155.69	22 32 29.3	−668.4	73.70	16 18.6	59 44.8	I. S.
	15	2 17.22	2.186	9 52 40.96	141.33	17 29 44.1	−831.0	70.13	16 5.4	58 56.2	I. N.
	16	3 7.14	1.984	10 46 41.31	129.22	11 37 51.5	−916.8	66.99	15 50.3	58 1.3	I. N.
	17	3 52.92	1.840	11 36 31.99	120.61	+ 5 24 9.1	−943.4	64.73	15 35.3	57 5.8	I. N.
	18	4 35.99	1.757	12 23 39.90	115.62	− 0 51 7.0	−926.9	63.39	15 21.2	56 13.9	I. N.
	19	5 17.76	1.730	13 9 29.56	114.05	− 6 53 7.8	−878.5	62.95	15 8.9	55 29.1	I. N.
	20	5 59.50	1.754	13 55 17.50	115.49	−12 30 17.4	−803.0	63.36	14 59.2	54 53.3	I. N.
	21	6 42.32	1.819	14 42 10.05	119.33	−17 32 13.3	−702.1	64.45	14 52.2	54 27.8	I. N.
	22	7 27.09	1.914	15 30 59.93	125.07	−21 48 19.5	−573.4	65.96	14 48.0	54 12.6	I. N.
	23	8 14.34	2.028	16 22 19.29	131.55	−25 7 8.6	−415.5	67.67	14 46.7	54 7.5	I. N.
	24	9 4.10	2.120	17 16 9.93	137.40	−27 16 49.3	−228.4	69.12	14 47.9	54 11.6	I. S.
	25	9 55.79	2.170	18 11 56.26	140.96	−28 6 53.2	− 19.3	69.98	14 51.1	54 23.6	I. S.
	26	10 48.26	2.183	19 8 29.70	141.22	−27 30 51.4	+199.3	70.00	14 56.2	54 42.2	I. S.
	27	11 40.17	2.134	20 4 29.43	138.27	−25 28 28.0	+409.8	69.20	15 2.6	55 5.7	I. S.
	28	12 30.44	2.060	20 58 50.21	133.23	−22 6 5.7	597.0	67.87	15 10.0	55 32.6	II. S.
	29	13 18.56	1.960	21 51 2.05	127.80	−17 35 16.1	751.0	66.45	15 17.8	56 1.8	II. N.
	30	14 4.68	1.887	22 41 13.35	123.43	−12 10 24.1	866.8	65.33	15 26.2	56 32.3	II. N.
	31	14 49.45	1.860	23 30 3.63	121.20	− 6 7 1.6	943.4	64.77	15 34.7	57 3.7	II. N.
Aug.	1	15 33.89	1.860	0 18 33.59	121.82	+ 0 18 54.6	+979.3	65.00	15 43.2	57 35.2	II. N.
	2	16 19.22	1.936	1 7 57.71	125.77	6 50 41.0	971.8	66.13	15 51.8	58 6.7	II. N.
	3	17 6.83	2.050	1 59 38.43	133.21	13 9 43.6	914.3	68.15	16 0.2	58 37.4	II. N.
	4	17 58.06	2.226	2 54 57.17	143.80	18 54 9.2	796.9	70.94	16 8.0	59 6.2	II. N.
	5	18 53.93	2.431	3 54 55.44	156.11	23 37 53.2	609.6	74.00	16 14.8	59 31.2	II. N.
	6	19 54.59	2.613	4 59 41.10	167.10	+26 52 4.3	+350.4	76.63	16 19.9	59 49.8	II. N.
	7	20 58.65	2.704	6 7 52.11	172.57	28 11 0.3	+ 38.9	77.86	16 22.4	59 59.0	II. S.
	8	22 3.31	2.660	7 16 38.68	169.91	27 21 44.4	−282.0	77.16	16 21.7	59 56.5	II. S.
	9	23 5.41	2.501	8 22 51.57	160.29	24 30 56.3	−561.6	74.80	16 17.5	59 41.0	II. S.
	11	0 2.91	2.287	9 24 27.39	147.59	20 2 12.1	−768.6	71.63	16 9.8	59 12.7	I. S.
	12	0 55.33	2.066	10 20 58.21	135.36	+14 26 36.9	−896.5	68.53	15 59.2	58 34.2	I. N.
	13	1 43.38	1.936	11 13 5.37	125.76	8 14 2.9	−955.9	66.01	15 46.9	57 48.3	I. N.
	14	2 23.25	1.828	12 2 1.63	119.48	+ 1 49 12.2	−980.5	64.33	15 33.7	57 0.0	I. N.
	15	3 11.28	1.779	12 49 6.81	116.49	− 4 28 52.2	−933.6	63.56	15 20.8	56 12.9	I. N.
	16	3 53.72	1.779	13 35 36.74	116.49	−10 25 28.8	−854.4	63.62	15 9.4	55 30.7	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Aug. 16	3 53.72	1.772	13 35 36.74	116.49	−10 25 28.8	−854.4	63.62	15 9.4	55 30.7	I. N.
17	4 36.70	1.816	14 22 39.18	119.11	−15 48 35.9	756.7	64.42	15 0.0	54 56.2	I. N.
18	5 21.16	1.893	15 11 10.42	123.78	−20 27 17.5	632.1	65.72	14 53.2	54 31.3	I. N.
19	6 7.74	1.990	16 1 50.00	129.62	−24 10 40.5	480.1	67.31	14 49.3	54 17.0	I. N.
20	6 56.71	2.068	16 54 52.55	135.45	−26 47 41.8	300.7	68.85	14 48.4	54 13.8	I. N.
21	7 47.75	2.159	17 49 59.87	139.79	−28 8 1.5	− 97.7	69.92	14 50.4	54 21.0	I. S.
22	8 40.00	2.186	18 46 20.30	141.40	−28 3 58.1	+119.1	70.26	14 55.0	54 38.0	I. S.
23	9 32.28	2.161	19 42 41.84	139.90	−26 32 39.5	336.0	69.81	15 1.8	55 2.7	I. S.
24	10 23.43	2.096	20 37 56.04	135.98	−23 37 15.3	537.1	68.72	15 10.1	55 33.8	I. S.
25	11 12.76	2.013	21 31 20.65	131.09	−19 26 35.5	710.4	67.36	15 19.5	56 8.0	I. S
26	12 0.17	1.939	22 22 49.16	126.54	−14 13 38.6	+847.6	66.15	15 29.2	56 43.9	I. S.
27	12 46.08	1.899	23 12 47.85	123.72	− 8 13 56.6	943.8	65.39	15 38.7	57 18.3	II. N.
28	13 31.33	1.885	0 2 7.09	123.35	− 1 44 36.0	995.4	65.33	15 47.2	57 49.7	II. N.
29	14 17.03	1.930	0 51 52.99	125.99	+ 4 55 56.9	999.1	66.10	15 54.5	58 16.9	II. N.
30	15 4.41	2.027	1 43 20.41	131.81	11 27 37.7	959.2	67.75	16 0.7	58 39.3	II. N.
31	15 54.74	2.173	2 37 44.54	140.69	+17 28 5.7	+841.7	70.10	16 5.4	58 56.5	II. N.
Sept. 1	16 49.00	2.349	3 36 5.64	151.99	22 32 25.2	668.6	72.85	16 8.8	59 9.0	II. N.
2	17 47.52	2.520	4 38 42.95	161.46	26 14 8.9	489.9	75.39	16 10.9	59 16.5	II. N.
3	18 49.42	2.622	5 44 43.99	167.67	28 9 17.8	+130.7	76.86	16 11.4	59 18.7	II. N.
4	19 52.53	2.615	6 51 57.46	167.92	28 3 21.9	−166.7	76.72	16 10.5	59 15.2	II. S.
5	20 54.08	2.498	7 57 37.06	160.15	+25 57 23.7	−453.7	74.94	16 7.7	59 5.0	II. S.
6	21 51.92	2.316	8 59 33.70	149.94	22 7 55.7	682.4	72.16	16 3.0	58 47.8	II. S
7	22 45.22	2.128	9 56 57.02	137.86	17 0 41.9	842.1	69.20	15 56.2	58 23.0	II. S
8	23 34.30	1.969	10 50 6.20	128.31	11 3 22.3	934.2	66.66	15 47.7	57 51.6	II. S.
10	0 20.12	1.857	11 39 59.42	121.63	+ 4 41 5.9	968.5	64.86	15 37.9	57 15.3	I. N. S
11	1 3.87	1.797	12 27 48.46	117.97	− 1 44 58.0	−954.8	63.86	15 27.2	56 36.2	I. N.
12	1 46.76	1.784	13 14 45.23	117.92	− 7 57 24.9	901.5	63.71	15 16.6	55 57.2	I. N.
13	2 29.87	1.814	14 1 55.41	119.03	−13 41 40.5	814.4	64.28	15 6.9	55 21.4	I. N.
14	3 14.13	1.878	14 50 14.93	122.90	−18 45 0.0	697.4	65.40	14 58.5	54 51.1	I. N.
15	4 0.23	1.965	15 40 25.09	128.09	−22 55 34.8	551.1	66.90	14 52.5	54 28.9	I. N.
16	4 48.50	2.055	16 32 45.76	133.56	−26 2 13.5	−378.0	68.41	14 49.0	54 16.2	I. N.
17	5 38.79	2.130	17 27 8.33	138.03	−27 54 47.2	−181.7	69.60	14 48.6	54 14.5	I. N.
18	6 30.46	2.167	18 22 53.30	140.98	−28 25 21.7	+ 30.3	70.19	14 51.2	54 24.0	I. S.
19	7 22.47	2.156	19 18 59.09	139.75	−27 29 58.7	246.1	70.00	14 56.7	54 44.2	I. S.
20	8 13.76	2.110	20 14 21.50	136.79	−25 9 36.4	452.9	69.18	15 4.9	55 14.5	I. S.
21	9 3.57	2.040	21 8 14.99	132.57	−21 30 11.0	+639.5	67.98	15 15.3	55 52.4	I. S.
22	9 51.67	1.970	22 0 25.24	128.42	−16 41 41.5	797.2	66.80	15 26.9	56 35.5	I. S.
23	10 38.34	1.923	22 51 9.80	126.61	−10 57 7.9	916.8	65.99	15 39.3	57 20.5	I. S.
24	11 24.31	1.913	23 41 11.89	126.09	− 4 32 1.2	986.8	65.81	15 51.0	58 3.6	I. S.
25	12 10.58	1.950	0 31 32.49	127.91	+ 2 15 26.1	1009.9	66.39	16 1.3	58 41.5	II. N.
26	12 58.36	2.040	1 23 23.31	132.52	+ 9 4 29.4	+1004.4	67.84	16 9.2	59 11.1	II. N.
27	13 48.86	2.176	2 17 58.15	140.81	15 30 26.2	913.9	70.05	16 14.5	59 30.4	II. N.
28	14 43.10	2.346	3 16 18.46	151.05	21 5 57.5	751.7	72.74	16 16.8	59 38.7	II. N.
29	15 41.49	2.513	4 18 47.65	161.06	25 22 19.4	518.8	75.23	16 16.0	59 37.1	II. N.
30	16 43.26	2.619	5 24 40.83	167.48	+27 53 48.8	+231.4	76.88	16 13.8	59 27.2	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Oct. 1	17 46.37	2.618	6 31 54.28	167.45	+28 24 31.7	− 78.2	76.88	16 9.3	59 11.0	II. S.
2	18 48.09	2.506	7 37 44.27	160.75	26 54 5.3	−367.7	75.26	16 3.7	58 50.4	II. S.
3	19 46.22	2.328	8 39 57.82	149.98	23 37 19.3	605.9	72.54	15 57.1	58 26.4	II. S.
4	20 39.80	2.138	9 37 38.03	138.50	18 58 2.7	779.7	69.55	15 50.1	58 0.2	II. S.
5	21 29.07	1.975	10 30 58.84	128.67	13 22 0.3	890.8	66.87	15 42.4	57 32.1	II. S.
6	22 14.95	1.856	11 20 55.64	121.56	+ 7 12 47.7	−946.9	64.91	15 34.3	57 2.2	II. S.
7	22 58.61	1.790	12 8 39.25	117.55	+ 0 50 45.1	956.2	63.74	15 25.9	56 31.2	II. S.
8	23 41.26	1.771	12 55 21.58	116.44	− 5 26 38.2	934.5	63.40	15 17.2	55 59.8	II. S.
10	0 23.99	1.796	13 42 8.86	117.91	−11 23 55.0	856.2	63.84	15 9.0	55 29.2	I. N.
11	1 7.74	1.865	14 29 58.05	121.50	−16 46 56.6	753.5	64.86	15 1.3	55 0.7	I. N.
12	1 53.25	1.938	15 19 32.11	126.50	−21 22 22.8	−618.4	66.28	14 54.8	54 36.8	I. N.
13	2 40.87	2.029	16 11 13.80	131.94	−24 57 42.3	453.5	67.83	14 49.8	54 19.0	I. N.
14	3 30.53	2.105	17 4 58.34	136.52	−27 21 46.5	263.5	69.10	14 47.2	54 9.1	I. N.
15	4 21.65	2.147	18 0 10.35	139.06	−28 26 2.8	− 56.1	69.82	14 47.0	54 8.7	I. N.
16	5 13.24	2.144	18 55 51.14	138.89	−28 5 58.8	+156.1	69.84	14 49.8	54 19.0	I. S.
17	6 4.25	2.100	19 50 56.47	136.22	−26 21 51.4	+362.2	69.17	14 55.7	54 40.4	I. S.
18	6 53.67	2.092	20 44 38 14	132.13	−23 18 27.5	551.3	68.06	15 4.4	55 12.4	I. S
19	7 41.78	1.982	21 36 37.56	127.93	−19 3 56.1	716.8	66.88	15 15.8	55 54.2	I. S
20	8 28.22	1.911	22 27 8.12	124.91	−13 48 37.8	854.3	66.01	15 29.3	56 43.7	I. S
21	9 13.85	1.896	23 16 49.94	124.00	− 7 44 42.6	959.0	65.67	15 43.8	57 37.5	I. S.
22	9 59.67	1.929	0 6 42.84	125.93	− 1 6 41.6	+1023.4	66.15	15 58.5	58 31.3	I. S.
23	10 46.88	2.014	0 58 0.26	131.09	+ 5 47 19.6	1036.9	67.48	16 11.8	59 20.3	I. S
24	11 36.84	2.156	1 52 2.35	139.61	12 34 20.7	966.1	69.71	16 22.5	59 59.3	I. N.
25	12 30.77	2.342	2 50 3.41	150.80	18 45 44.6	856.7	72.58	16 29.3	60 24.0	II. N.
26	13 29.38	2.539	3 52 46.21	162.61	23 48 32.7	649.7	75.62	16 31.6	60 32.7	II. N.
27	14 32.22	2.663	4 59 43.69	171.30	+27 10 8.7	+355.0	77.67	16 29.4	60 24.6	II. N.
28	15 37.25	2.713	6 8 52.77	173.06	28 27 10.9	+ 38.2	78.14	16 23.4	60 2.6	II. N.
29	16 41.33	2.606	7 17 4.73	166.71	27 34 19.8	−286.1	76.70	16 14.6	59 30.6	II. S.
30	17 41.66	2.410	8 21 30.76	154.80	24 45 45.2	545.6	73.84	16 4.4	58 52.9	II. S.
31	18 36.88	2.192	9 20 49.40	141.79	20 27 26.7	734.0	70.50	15 53.5	58 12.8	II. S.
Nov. 1	19 27.10	2.001	10 15 7.68	130.94	+15 7 30.0	−855.3	67.47	15 42.9	57 33.6	II. S.
2	20 13.32	1.860	11 5 25.17	121.80	9 10 33.2	921.0	65.10	15 32.6	56 56.2	II. S.
3	20 56.85	1.775	11 53 0.25	116.70	+ 2 56 38.2	941.7	63.62	15 23.3	56 21.9	II. S.
4	21 38.99	1.744	12 39 12.21	114.81	− 3 17 49.2	924.5	63.02	15 14.8	55 50.6	II. S.
5	22 20.96	1.760	13 25 13.85	115.78	− 9 18 26.1	872.8	63.26	15 7.1	55 22.4	II. S.
6	23 3.80	1.816	14 12 8.29	119.12	−14 51 39.6	−787.6	64.15	15 0.3	54 57.4	II. S.
7	23 48.35	1.899	15 0 45.18	124.18	−19 44 3.5	668.7	65.54	14 54.5	54 35.8	II. N.
9	0 35.11	1.996	15 51 34.56	129.97	−23 42 12.1	516.5	67.11	14 49.7	54 18.4	I. N.
10	1 24.10	2.083	16 44 38.54	135.16	−26 33 29.8	335.4	68.53	14 46.3	54 6.0	I. N.
11	2 14.80	2.136	17 39 25.89	138.36	−28 7 39.8	−129.9	69.44	14 44.5	53 59.8	I. N.
12	3 6 23	2.140	18 34 56.37	138.66	−28 18 39.3	+ 78.2	69.60	14 45.1	54 1.3	I. N.
13	3 57.18	2.096	19 29 58.40	136.08	−27 5 53.2	283.7	69.01	14 47.9	54 11.8	I. S.
14	4 46.68	2.033	20 23 33.17	131.61	−24 33 59.3	479.2	67.87	14 53.4	54 31.9	I. S.
15	5 34.26	1.941	21 15 12.21	126.09	−20 51 11.3	637.4	66.57	15 1.7	55 2.3	I. S.
16	6 20.02	1.875	22 5 1.76	122.76	−16 7 28.2	+776.8	65.49	15 12.8	55 43.2	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Nov. 16	6 20.02	1.875	22 5 1.76	122.70	−16 7 28.2	+776.8	65.49	15 12.8	55 43.2	I. S.
17	7 4.55	1.842	22 53 37.71	120.71	−10 33 28.5	868.6	64.91	15 26.3	56 33.0	I. S.
18	7 48.82	1.855	23 41 57.86	121.50	− 4 20 36.4	970.2	65.09	15 41.8	57 30.1	I. S.
19	8 34.06	1.924	0 31 16.10	125.63	+ 2 17 45.7	1014.5	66.16	15 58.2	58 30.2	I. S.
20	9 21.69	2.055	1 22 58.03	133.50	9 4 16.5	1008.4	68.20	16 14.2	59 28.7	I. S.
21	10 13.20	2.246	2 18 33.96	145.01	+15 35 20.4	+933.7	71.14	16 28.1	60 19.9	I. S.
22	11 9.88	2.480	3 19 20.31	159.01	21 19 43.1	772.3	74.58	16 38.1	60 56.9	I. N.
23	12 12.11	2.697	4 25 41.02	172.16	25 40 21.5	515.8	77.76	16 43.1	61 14.8	II. N.
24	13 18.58	2.818	5 36 16.65	179.35	28 2 16.2	+185.3	79.45	16 42.1	61 11.6	II. N.
25	14 26.06	2.777	6 47 52.90	176.91	28 5 49.3	−164.8	78.96	16 35.8	60 48.2	II. N.
26	15 30.70	2.591	7 56 38.80	165.79	+25 56 16.3	−471.4	76.38	16 25.2	60 9.1	II. S.
27	16 29.97	2.343	9 0 1.44	150.86	21 59 41.1	697.5	72.78	16 11.7	59 19.8	II. S.
28	17 23.32	2.108	9 57 27.58	136.69	16 49 34.8	840.3	69.18	15 57.3	58 26.6	II. S.
29	18 11.59	1.924	10 49 47.99	125.63	10 56 18.2	916.3	66.27	15 42.9	57 33.9	II. S.
30	18 56.19	1.803	11 38 28.02	118.34	+ 4 43 26.7	940.9	64.23	15 29.7	56 45.4	II. S.
Dec. 1	19 38.63	1.744	12 24 57.98	114.73	− 1 31 21.6	−927.4	63.17	15 18.0	56 2.3	II. S.
2	20 20.29	1.736	13 10 41.34	114.39	− 7 34 13.9	881.8	62.99	15 8.1	55 26.0	II. S.
3	21 2.40	1.777	13 56 51.07	116.85	−13 12 57.1	806.8	63.64	15 0.1	54 56.4	II. S.
4	21 45.94	1.855	14 44 27.32	121.48	−18 15 29.3	700.6	64.85	14 53.7	54 33.1	II. S.
5	22 31.62	1.953	15 34 12.14	127.38	−22 29 16.4	569.6	66.40	14 48.9	54 15.5	II. S.
6	23 19.70	2.051	16 26 21.37	133.96	−25 41 29.9	−393.1	67.92	14 45.6	54 3.3	II. N.
8	0 9.86	2.123	17 20 36.06	137.58	−27 40 29.5	−198.0	69.06	14 43.7	53 56.5	I. N.
9	1 1.21	2.147	18 16 1.67	139.01	−28 18 1.0	+ 11.6	69.47	14 43.4	53 55.1	I. N.
10	1 52.46	2.116	19 11 21.52	137.13	−27 31 22.1	220.0	69.02	14 44.6	53 59.6	I. N.
11	2 42.39	2.041	20 5 22.55	132.65	−25 24 2.0	412.8	67.94	14 47.7	54 11.0	I. S.
12	3 30.26	1.946	20 57 18.89	127.00	−22 4 24.6	+580.6	66.48	14 52.8	54 29.8	I. S.
13	4 15.91	1.860	21 47 2.03	121.78	−17 43 27.8	719.4	65.12	15 0.2	54 56.9	I. S.
14	4 59.77	1.800	22 34 57.29	118.18	−12 32 43.9	839.5	64.18	15 9.9	55 32.9	I. S.
15	5 42.68	1.782	23 21 55.26	117.13	− 6 43 30.7	911.6	63.90	15 22.0	56 17.4	I. S.
16	6 25.77	1.817	0 9 4.30	119.21	− 0 27 16.3	964.1	64.49	15 36.4	57 10.0	I. S.
17	7 10.40	1.912	0 57 46.39	124.07	+ 6 2 53.9	+979.8	66.04	15 52.1	58 7.8	I. S.
18	7 58.12	2.075	1 49 34.07	134.69	12 30 1.5	946.1	68.61	16 8.7	59 7.7	I. S.
19	8 50.51	2.298	2 46 2.20	148.18	18 30 38.2	843.8	72.01	16 23.8	60 4.3	I. S.
20	9 48.77	2.557	3 48 24.04	163.68	23 33 7.6	652.6	75.77	16 36.6	60 51.2	I. S.
21	10 52.96	2.779	4 56 42.93	177.03	26 59 58.5	367.1	78.89	16 45.0	61 21.6	I. N.
22	12 1.10	2.870	6 8 58.56	182.54	+28 17 37.7	+ 14.9	80.15	16 47.5	61 31.0	II. N.
23	13 9.27	2.782	7 21 16.83	177.93	27 11 52.6	−337.8	78.92	16 43.8	61 17.5	II. N.
24	14 13.56	2.560	8 29 41.17	163.92	23 56 7.9	696.4	75.83	16 34.3	60 42.9	II. S.
25	15 11.87	2.299	9 32 6.21	148.21	19 3 25.8	891.1	72.03	16 20.8	59 53.4	II. S.
26	16 4.21	2.072	10 28 31.53	134.42	13 10 59.6	928.0	68.53	16 4.9	58 54.9	II. S.
27	16 51.75	1.902	11 20 8.64	124.35	+ 6 50 12.7	−966.4	65.87	15 48.5	57 54.3	II. S.
28	17 36.08	1.802	12 8 31.84	118.25	+ 0 24 17.4	956.4	64.22	15 32.8	56 56.7	II. S.
29	18 18.72	1.761	12 55 13.74	115.83	− 5 50 5.9	910.4	63.53	15 18.8	56 5.2	II. S.
30	19 1.04	1.774	13 41 36.99	116.61	−11 40 10.9	835.2	63.74	15 7.0	55 22.0	II. S.
31	19 44.23	1.831	14 28 51.51	120.00	−16 54 48.7	−732.6	64.62	14 57.7	54 47.9	II. S.

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
Jan. 0	22 25.9	17 11 56.71	−21 12 8.0	8.6	3.2	0.21
1	22 26.4	17 16 26.28	21 25 52.6	8.4	3.2	0.21
2	22 27.2	17 21 8.70	21 39 23.6	8.3	3.1	0.21
3	22 28.2	17 26 2.74	21 52 33.5	8.1	3.1	0.21
4	22 29.4	17 31 7.30	22 5 15.3	8.0	3.0	0.20
5	22 30.7	17 36 21.43	−22 17 22.9	7.8	3.0	0.20
6	22 32.1	17 41 44.24	22 28 51.1	7.7	2.9	0.20
7	22 33.6	17 47 14.97	22 39 35.3	7.6	2.9	0.20
8	22 35.3	17 52 52.91	22 49 31.0	7.5	2.9	0.20
9	22 37.1	17 58 37.46	22 58 34.5	7.4	2.8	0.20
10	22 39.0	18 4 28.08	−23 6 42.4	7.3	2.8	0.19
11	22 40.9	18 10 24.28	23 13 51.4	7.2	2.8	0.19
12	22 43.1	18 16 25.59	23 19 59.0	7.2	2.7	0.19
13	22 45.2	18 22 31.59	23 25 2.7	7.1	2.7	0.19
14	22 47.4	18 28 41.92	23 29 0.3	7.1	2.7	0.19
15	22 49.7	18 34 56.25	−23 31 50.0	7.0	2.6	0.19
16	22 52.1	18 41 14.26	23 33 29.1	7.0	2.6	0.19
17	22 54.5	18 47 35.65	23 33 56.8	6.9	2.6	0.19
18	22 56.9	18 54 0.19	23 33 11.3	6.9	2.6	0.18
19	22 59.4	19 0 27.64	23 31 11.1	6.8	2.5	0.18
20	23 1.9	19 6 57.76	−23 27 55.0	6.7	2.5	0.18
21	23 4.6	19 13 30.35	23 23 21.8	6.7	2.5	0.18
22	23 7.3	19 20 5.21	23 17 30.4	6.6	2.5	0.18
23	23 9.9	19 26 42.18	23 10 19.9	6.6	2.5	0.18
24	23 12.6	19 33 21.10	23 1 49.3	6.6	2.5	0.18
25	23 15.3	19 40 1.81	−22 51 57.6	6.5	2.5	0.18
26	23 18.1	19 46 44.18	22 40 44.1	6.5	2.4	0.18
27	23 20.8	19 53 28.08	22 28 8.0	6.5	2.4	0.18
28	23 23.6	20 0 13.39	22 14 8.5	6.5	2.4	0.18
29	23 26.5	20 7 0.00	21 58 45.2	6.4	2.4	0.17
30	23 29.3	20 13 47.82	−21 41 57.5	6.4	2.4	0.17
31	23 32.2	20 20 36.74	21 23 44.6	6.4	2.4	0.17
Feb. 1	23 35.0	20 27 26.69	21 4 6.1	6.4	2.4	0.17
2	23 37.9	20 34 17.60	20 43 1.6	6.4	2.4	0.17
3	23 40.8	20 41 9.41	20 20 30.5	6.3	2.4	0.17
4	23 43.8	20 48 2.05	−19 56 32.4	6.3	2.4	0.17
5	23 46.7	20 54 55.47	19 31 7.0	6.3	2.4	0.17
6	23 49.7	21 1 49.59	19 4 14.0	6.3	2.4	0.17
7	23 52.6	21 8 44.38	18 35 53.5	6.3	2.4	0.17
8	23 55.6	21 15 39.80	18 6 5.1	6.3	2.4	0.17
9	23 58.6	21 22 35.82	−17 34 48.5	6.3	2.4	0.17
11	0 1.6	21 29 32.39	17 2 3.9	6.3	2.4	0.17
12	0 4.6	21 36 29.46	16 27 51.7	6.3	2.4	0.17
13	0 7.6	21 43 26.98	15 52 11.8	6.3	2.4	0.17
14	0 10.6	21 50 24.91	15 15 4.7	6.4	2.4	0.17
15	0 13.6	21 57 23.20	−14 36 31.2	6.4	2.4	0.17
16	0 16.6	22 4 21.77	−13 56 31.9	6.4	2.4	0.17
Feb. 16	0 16.6	22 4 21.77	−13 56 31.9	6.4	2.4	0.17
17	0 19.7	22 11 20.55	13 15 8.0	6.4	2.5	0.17
18	0 22.7	22 18 19.43	12 32 20.7	6.5	2.5	0.17
19	0 25.7	22 25 18.26	11 48 12.0	6.5	2.5	0.17
20	0 28.7	22 32 16.89	11 2 43.8	6.6	2.5	0.17
21	0 31.7	22 39 15.11	−10 15 59.2	6.6	2.5	0.17
22	0 34.8	22 46 12.68	9 28 1.4	6.7	2.5	0.17
23	0 37.8	22 53 9.30	8 38 53.7	6.7	2.6	0.17
24	0 40.7	23 0 4.58	7 48 41.3	6.8	2.6	0.17
25	0 43.7	23 6 58.06	6 57 29.9	6.9	2.6	0.17
26	0 46.6	23 13 49.20	− 6 5 26.2	7.0	2.6	0.18
27	0 49.5	23 20 37.37	5 12 37.9	7.1	2.7	0.18
28	0 52.1	23 27 21.77	4 19 13.9	7.2	2.7	0.18
Mar. 1	0 55.0	23 34 1.54	3 25 24.2	7.3	2.8	0.18
2	0 57.7	23 40 35.68	2 31 20.3	7.4	2.8	0.18
3	1 0.2	23 47 3.05	− 1 37 15.9	7.6	2.9	0.19
4	1 2.5	23 53 22.36	− 0 43 24.7	7.7	2.9	0.19
5	1 4.7	23 59 32.21	+ 0 9 57.8	7.9	3.0	0.19
6	1 6.7	0 5 31.09	1 2 35.1	8.0	3.1	0.20
7	1 8.5	0 11 17.38	1 54 9.8	8.2	3.1	0.20
8	1 10.1	0 16 49.42	+ 2 44 23.9	8.4	3.2	0.21
9	1 11.4	0 22 5.51	3 32 59.3	8.6	3.3	0.21
10	1 12.5	0 27 3.89	4 19 37.5	8.9	3.4	0.22
11	1 13.2	0 31 42.86	5 4 0.4	9.2	3.5	0.22
12	1 13.5	0 36 0.81	5 45 51.1	9.5	3.6	0.23
13	1 13.6	0 39 56.22	+ 6 24 53.2	9.8	3.7	0.24
14	1 13.1	0 43 27.68	7 0 50.7	10.1	3.8	0.24
15	1 12.3	0 46 33.91	7 33 29.2	10.4	3.9	0.25
16	1 11.0	0 49 13.87	8 2 35.9	10.7	4.0	0.26
17	1 9.3	0 51 26.69	8 27 58.9	11.0	4.1	0.27
18	1 7.1	0 53 11.79	+ 8 49 27.9	11.3	4.3	0.28
19	1 4.4	0 54 28.83	9 6 53.8	11.7	4.4	0.29
20	1 1.3	0 55 17.78	9 20 9.6	12.0	4.6	0.29
21	0 57.7	0 55 38.95	9 29 10.3	12.4	4.7	0.30
22	0 53.7	0 55 33.00	9 33 53.1	12.8	4.8	0.31
23	0 49.2	0 55 0.93	+ 9 34 17.4	13.1	4.9	0.32
24	0 44.3	0 54 4.18	9 30 25.7	13.4	5.0	0.33
25	0 39.2	0 52 44.54	9 22 23.6	13.7	5.2	0.33
26	0 33.5	0 51 4.18	9 10 20.3	14.0	5.3	0.34
27	0 27.6	0 49 5.71	8 54 29.1	14.2	5.4	0.35
28	0 21.5	0 46 51.97	+ 8 35 6.9	14.4	5.4	0.35
29	0 15.1	0 44 26.10	8 12 35.0	14.6	5.5	0.36
30	0 8.6	0 41 51.46	7 47 17.4	14.8	5.6	0.37
31	0 2.0	0 39 11.42	7 19 41.3	15.0	5.6	0.37
31	23 55.4	0 36 29.43	6 50 16.5	15.1	5.7	0.38
32	23 48.8	0 33 48.88	+ 6 19 34.4	15.2	5.7	0.38
33	23 42.3	0 31 12.87	+ 5 48 6.5	15.1	5.7	0.38

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 1	23 48.8	0 33 48.88	+ 6 19 34.4	15.2	5.7	0.38	May 17	22 43.9	2 30 5.28	+12 34 9.2	7.6	2.9	0.20
2	23 42.3	0 31 12.87	5 48 6.5	15.1	5.7	0.38	18	22 46.6	2 36 48.39	13 14 38.5	7.5	2.9	0.20
3	23 35.8	0 28 44.32	5 16 23.8	15.1	5.7	0.38	19	22 49.5	2 43 41.84	13 55 26.0	7.4	2.8	0.19
4	23 29.7	0 26 25 90	4 44 56.3	15.0	5.7	0.38	20	22 52.7	2 50 45.87	14 36 25.3	7.3	2.8	0.19
5	23 23.6	0 24 19.84	4 14 11.4	15.0	5.6	0.38	21	22 56.0	2 58 0.75	15 17 29.9	7.3	2.8	0.19
6	23 17.8	0 22 28.06	+ 3 44 34.4	14.9	5.6	0.37	22	22 59.5	3 5 26.68	+15 58 32.2	7.2	2.7	0.19
7	23 12.2	0 20 52.05	3 16 27.0	14.7	5.5	0.37	23	23 3.2	3 13 3.83	16 39 23.7	7.1	2.7	0.19
8	23 7.0	0 19 32.96	2 50 7.8	14.6	5.5	0.37	24	23 7.0	3 20 52.36	17 19 55.8	7.1	2.7	0.19
9	23 2.1	0 18 31.63	2 25 51.8	14.4	5.4	0.36	25	23 11.1	3 28 52.31	17 59 59.1	7.0	2.6	0.18
10	22 57.4	0 17 48.57	2 3 51.0	14.2	5.4	0.36	26	23 15.3	3 37 3.64	18 39 23.1	7.0	2.6	0.18
11	22 53.1	0 17 24.01	+ 1 44 14.8	14.0	5.3	0.36	27	23 19.7	3 45 26.22	+19 17 56.9	6.9	2.6	0.18
12	22 49.1	0 17 18.00	1 27 8.7	13.8	5.3	0.35	28	23 24.3	3 53 59.75	19 55 28.8	6.8	2.6	0.18
13	22 45.3	0 17 30.33	1 12 37.1	13.6	5.2	0.35	29	23 29.1	4 2 43.81	20 31 46.6	6.8	2.5	0.18
14	22 41.9	0 18 0.68	1 0 41.8	13.3	5.1	0.35	30	23 34.1	4 11 37.82	21 6 37.9	6.7	2.5	0.18
15	22 38.8	0 18 48.58	0 51 22.8	13.1	5.0	0.34	31	23 39.1	4 20 41.05	21 39 50.1	6.7	2.5	0.18
16	22 35.9	0 19 53.50	+ 0 44 38.7	12.9	4.9	0.34	June 1	23 44.3	4 29 52.55	+22 11 10.9	6.7	2.5	0.18
17	22 33.4	0 21 14.85	0 40 27.8	12.7	4.8	0.33	2	23 49.7	4 39 11.22	22 40 28.4	6.7	2.5	0.18
18	22 31.0	0 22 52.02	0 38 46.6	12.4	4.7	0.32	3	23 55.2	4 48 35.81	23 7 31.5	6.7	2.5	0.18
19	22 29.0	0 24 44.33	0 39 31.4	12.2	4.6	0.32	5	0 0.7	4 58 4.95	23 32 10.3	6.7	2.5	0.18
20	22 27.1	0 26 51.12	0 42 38.2	12.0	4.5	0.31	6	0 6.3	5 7 37.16	23 54 16.1	6.8	2.5	0.18
21	22 25.6	0 29 11.77	+ 0 48 2.3	11.8	4.4	0.30	7	0 11.9	5 17 10.90	+24 13 42.0	6.8	2.6	0.19
22	22 24.2	0 31 45.68	0 55 39.3	11.5	4.3	0.30	8	0 17.5	5 26 44.60	24 30 22.7	6.8	2.6	0.19
23	22 23.0	0 34 32.24	1 5 24.3	11.3	4.3	0.29	9	0 23.1	5 36 16.70	24 44 15.0	6.8	2.6	0.19
24	22 22.1	0 37 30.89	1 17 12.7	11.1	4.2	0.29	10	0 28.6	5 45 45.73	24 55 17.3	6.9	2.6	0.19
25	22 21.3	0 40 41.10	1 30 59.6	10.9	4.1	0.28	11	0 34.1	5 55 10.27	25 3 29.8	6.9	2.6	0.19
26	22 20.7	0 44 2.40	+ 1 46 40.4	10.7	4.1	0.27	12	0 39.3	6 4 28.98	+25 8 54.5	7.0	2.7	0.19
27	22 20.3	0 47 34.34	2 4 10.7	10.5	4.0	0.27	13	0 44.6	6 13 40.67	25 11 34.8	7.1	2.7	0.20
28	22 20.1	0 51 16.53	2 23 25.9	10.4	3.9	0.26	14	0 49.7	6 22 44.29	25 11 35.3	7.1	2.7	0.20
29	22 20.0	0 55 8.60	2 44 21.8	10.2	3.9	0.25	15	0 54.6	6 31 38.92	25 9 1.3	7.2	2.7	0.20
30	22 20.0	0 59 10.23	3 6 54.1	10.0	3.8	0.25	16	0 59.5	6 40 23.78	25 3 59.4	7.3	2.7	0.20
May 1	22 20.3	1 3 21.17	+ 3 30 58.8	9.8	3.7	0.24	17	1 4.1	6 48 58.20	+24 56 36.7	7.4	2.8	0.20
2	22 20.7	1 7 41.18	3 56 32.0	9.6	3.7	0.24	18	1 8.5	6 57 21.64	24 47 0.6	7.4	2.8	0.21
3	22 21.2	1 12 10.04	4 23 29.6	9.5	3.6	0.24	19	1 12.8	7 5 33.67	24 35 18.6	7.5	2.8	0.21
4	22 22.0	1 16 47.62	4 51 48.1	9.3	3.6	0.24	20	1 16.9	7 13 33.94	24 21 39.0	7.6	2.9	0.21
5	22 22.8	1 21 33.81	5 21 23.6	9.1	3.5	0.23	21	1 20.7	7 21 22.18	24 6 9.1	7.7	2.9	0.21
6	22 23.7	1 26 28.52	+ 5 52 12.3	9.0	3.5	0.23	22	1 23.4	7 28 58.19	+23 48 56.9	7.9	3.0	0.21
7	22 24.8	1 31 31.70	6 24 10.8	8.8	3.4	0.23	23	1 27.8	7 36 21.86	23 30 10.2	8.0	3.0	0.22
8	22 26.0	1 36 43.36	6 57 15.6	8.7	3.3	0.23	24	1 31.0	7 43 33.09	23 9 56.3	8.1	3.1	0.22
9	22 27.4	1 42 3.53	7 31 22.8	8.5	3.3	0.22	25	1 34.0	7 50 31.84	22 48 22.6	8.2	3.1	0.22
10	22 28.9	1 47 32.29	8 6 28.9	8.4	3.2	0.22	26	1 36.9	7 57 18.06	22 25 36.9	8.4	3.1	0.22
11	22 30.7	1 53 9.72	+ 8 42 30.2	8.3	3.2	0.22	27	1 39.4	8 3 51.75	+22 1 45.6	8.5	3.2	0.22
12	22 32.5	1 58 55.94	9 19 22.8	8.1	3.1	0.21	28	1 41.9	8 10 12.92	21 36 55.5	8.6	3.2	0.23
13	22 34.4	2 4 51.10	9 57 2.8	8.0	3.1	0.21	29	1 44.0	8 16 21.58	21 11 13.2	8.8	3.3	0.23
14	22 36.6	2 10 55.41	10 35 25.8	7.9	3.0	0.21	30	1 46.0	8 22 17.75	20 44 45.1	8.9	3.3	0.23
15	22 38.9	2 17 9.06	11 14 27.6	7.8	3.0	0.20	31	1 47.8	8 28 1.41	20 17 37.4	9.0	3.4	0.23
16	22 41.2	2 23 32.27	+11 54 3.8	7.7	3.0	0.20	32	1 49.3	8 33 32.57	+19 49 56.2	9.2	3.5	0.24
17	22 43.9	2 30 5.28	+12 34 9.2	7.6	2.9	0.20	33	1 50.8	8 38 51.22	+19 21 47.6	9.3	3.5	0.24

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	1 47.8	8 28 1.41	+20 17 37.4	9.0	3.4	0.23	Aug. 15	23 10.2	8 51 19.27	+14 24 18.7	12.4	4.7	0.33
2	1 49.3	8 33 32.57	19 49 56.2	9.2	3.5	0.24	16	23 5.9	8 51 0.83	14 43 10.0	12.1	4.5	0.32
3	1 50.8	8 38 51.22	19 21 47.6	9.3	3.5	0.24	17	23 2.2	8 51 11.57	15 0 32.1	11.8	4.4	0.31
4	1 51.9	8 43 57.32	18 53 17.1	9.5	3.6	0.25	18	22 58.9	8 51 52.44	15 16 10.3	11.5	4.3	0.30
5	1 52.9	8 48 50.80	18 24 30.6	9.6	3.6	0.25	19	22 56.3	8 53 4.13	15 29 50.7	11.2	4.2	0.29
6	1 53.6	8 53 31.59	+17 55 34.0	9.8	3.7	0.25	20	22 54.0	8 54 46.89	+15 41 20.5	10.9	4.0	0.29
7	1 54.1	8 57 59.59	17 26 32.9	10.0	3.8	0.26	21	22 52.3	8 57 0.64	15 50 27.7	10.5	3.9	0.28
8	1 54.4	9 2 14.67	16 57 32.7	10.2	3.8	0.26	22	22 51.1	8 59 45.01	15 57 1.5	10.2	3.8	0.27
9	1 54.5	9 6 16.67	16 28 39.3	10.4	3.9	0.27	23	22 50.4	9 2 59.28	16 0 52.5	9.9	3.7	0.26
10	1 54.4	9 10 5.38	15 59 58.5	10.6	4.0	0.27	24	22 50.2	9 6 42.48	16 1 51.9	9.6	3.6	0.25
11	1 54.1	9 13 40.57	+15 31 36.2	10.8	4.1	0.27	25	22 50.4	9 10 53.36	+15 59 52.8	9.4	3.5	0.25
12	1 53.5	9 17 1.98	15 3 38.2	11.0	4.1	0.28	26	22 51.1	9 15 30.41	15 54 49.5	9.1	3.4	0.24
13	1 52.7	9 20 9.33	14 36 10.8	11.2	4.2	0.28	27	22 52.2	9 20 31.89	15 46 38.3	8.8	3.3	0.23
14	1 51.6	9 23 2.30	14 9 20.0	11.4	4.3	0.29	28	22 53.6	9 25 55.90	15 35 17.1	8.6	3.2	0.23
15	1 50.3	9 25 40.54	13 43 12.2	11.6	4.4	0.29	29	22 55.4	9 31 40.33	15 20 45.0	8.4	3.2	0.22
16	1 48.8	9 28 3.65	+13 17 54.1	11.8	4.5	0.29	30	22 57.5	9 37 42.97	+15 3 4.5	8.2	3.1	0.22
17	1 47.0	9 30 11.22	12 53 32.8	12.0	4.6	0.30	31	22 59.8	9 44 1.56	14 42 19.7	8.0	3.0	0.21
18	1 44.8	9 32 2.84	12 30 14.9	12.2	4.6	0.30	Sept. 1	23 2.3	9 50 33.79	14 18 36.1	7.8	3.0	0.21
19	1 42.5	9 33 38.08	12 8 7.7	12.4	4.7	0.31	2	23 5.2	9 57 17.42	13 52 1.4	7.6	2.9	0.20
20	1 39.9	9 34 56.48	11 47 18.9	12.6	4.8	0.31	3	23 8.1	10 4 10.25	13 22 45.3	7.4	2.8	0.20
21	1 37.0	9 35 57.62	+11 27 55.9	12.8	4.9	0.32	4	23 11.3	10 11 10.16	+12 50 58.1	7.3	2.8	0.19
22	1 33.7	9 36 41.09	11 10 6.4	13.0	5.0	0.32	5	23 14.4	10 18 15.26	12 16 51.0	7.1	2.7	0.19
23	1 30.2	9 37 6.52	10 53 58.1	13.2	5.0	0.33	6	23 17.5	10 25 23.79	11 40 36.6	7.0	2.7	0.19
24	1 26.5	9 37 13.60	10 39 38.9	13.4	5.1	0.34	7	23 20.7	10 32 34.21	11 2 27.5	6.9	2.6	0.18
25	1 22.3	9 37 2.11	10 27 16.5	13.7	5.2	0.34	8	23 24.0	10 39 45.17	10 22 35.8	6.9	2.6	0.18
26	1 17.8	9 36 31.92	+10 16 58.3	13.9	5.2	0.35	9	23 27.1	10 46 55.52	+ 9 41 13.8	6.8	2.6	0.18
27	1 13.2	9 35 43.08	10 8 50.8	14.1	5.3	0.35	10	23 30.4	10 54 4.31	8 58 33.4	6.7	2.6	0.18
28	1 8.1	9 34 35.80	10 3 0.4	14.2	5.4	0.36	11	23 33.6	11 1 10.76	8 14 45.5	6.7	2.5	0.17
29	1 2.7	9 33 10.47	9 59 32.1	14.4	5.4	0.36	12	23 36.7	11 8 14.27	7 30 1.1	6.6	2.5	0.17
30	0 57.1	9 31 27.74	9 58 29.9	14.5	5.5	0.37	13	23 39.7	11 15 14.33	6 44 29.7	6.6	2.5	0.17
31	0 51.2	9 29 28.56	+ 9 59 56.8	14.5	5.5	0.37	14	23 42.7	11 22 10.60	+ 5 58 20.2	6.5	2.5	0.17
Aug. 1	0 45.1	9 27 14.14	10 3 53.4	14.6	5.5	0.37	15	23 45.6	11 29 2.88	5 11 40.7	6.5	2.5	0.17
2	0 38.6	9 24 46.05	10 10 18.8	14.7	5.6	0.38	16	23 48.5	11 35 51.02	4 24 38.8	6.5	2.4	0.16
3	0 32.0	9 22 6.19	10 19 9.7	14.7	5.6	0.38	17	23 51.3	11 42 34.94	3 37 21.1	6.4	2.4	0.16
4	0 25.2	9 19 16.80	10 30 20.4	14.8	5.6	0.38	18	23 54.0	11 49 14.64	2 49 53.9	6.4	2.4	0.16
5	0 18.4	9 16 20.40	+10 43 42.7	14.8	5.5	0.38	19	23 56.6	11 55 50.17	+ 2 2 22.3	6.4	2.4	0.16
6	0 11.5	9 13 19.87	10 59 6.1	14.7	5.5	0.37	20	23 59.1	12 2 21.60	1 14 51.3	6.4	2.4	0.16
7	0 4.5	9 10 18.31	11 16 17.6	14.6	5.5	0.37	22	0 1.7	12 8 49.08	+ 0 27 25.4	6.3	2.4	0.16
7	23 57.6	9 7 18.99	11 35 2.1	14.4	5.4	0.37	23	0 4.1	12 15 12.75	− 0 19 51.7	6.3	2.4	0.16
8	23 50.7	9 4 25.32	11 55 3.0	14.3	5.4	0.37	24	0 6.5	12 21 32.75	1 6 56.4	6.3	2.4	0.16
9	23 44.1	9 1 40.70	+12 16 2.1	14.1	5.3	0.36	25	0 8.8	12 27 49.27	− 1 53 45.5	6.3	2.4	0.16
10	23 37.6	8 59 8.52	12 37 40.3	13.9	5.2	0.36	26	0 11.1	12 34 2.48	2 40 16.3	6.3	2.4	0.16
11	23 31.5	8 56 52.00	12 59 38.0	13.6	5.1	0.35	27	0 13.4	12 40 12.57	3 26 26.2	6.3	2.4	0.16
12	23 25.6	8 54 54.21	13 21 35.6	13.3	5.0	0.35	28	0 15.6	12 46 19.77	4 12 12.9	6.3	2.4	0.16
13	23 20.0	8 53 17.92	13 43 14.0	13.0	4.9	0.34	29	0 17.6	12 52 24.23	4 57 34.0	6.3	2.4	0.16
14	23 14.9	8 52 5.56	+14 4 14.4	12.7	4.8	0.33	30	0 19.7	12 58 26.13	− 5 42 27.9	6.3	2.4	0.16
15	23 10.2	8 51 19.27	+14 24 18.7	12.4	4.7	0.33	31	0 21.7	13 4 25.68	− 6 26 52.7	6.3	2.4	0.16

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	0 21.7	13 4 25.68	− 6 26 52.7	6.3	2.4	0.16	Nov. 16	1 0.6	16 44 45.71	−24 14 56.8	11.4	4.3	0.31
2	0 23.7	13 10 23.06	7 10 46.6	6.3	2.4	0.16	17	0 56.2	16 44 10.61	24 1 36.1	11.7	4.4	0.31
3	0 25.7	13 16 18.42	7 54 8.3	6.3	2.4	0.16	18	0 50.9	16 42 52.73	23 45 24.2	11.9	4.5	0.32
4	0 27.7	13 22 11.92	8 36 56.0	6.3	2.4	0.16	19	0 45.0	16 40 50.91	23 26 15.0	12.2	4.6	0.33
5	0 29.6	13 28 3.73	9 19 8.5	6.3	2.4	0.16	20	0 38.2	16 38 5.13	23 4 5.6	12.4	4.7	0.33
6	0 31.5	13 33 54.00	−10 0 44.5	6.4	2.4	0.16	21	0 30.9	16 34 37.02	−22 38 58.7	12.7	4.8	0.34
7	0 33.4	13 39 42.84	10 41 42.5	6.4	2.4	0.16	22	0 22.8	16 30 30.13	22 11 3.6	12.9	4.9	0.34
8	0 35.2	13 45 30.39	11 22 1.2	6.4	2.4	0.16	23	0 14.2	16 25 49.98	21 40 39.3	13.0	5.0	0.35
9	0 37.0	13 51 16.76	12 1 39.7	6.5	2.4	0.17	24	0 5.2	16 20 44.08	21 8 15.2	13.1	5.0	0.35
10	0 38.8	13 57 2.05	12 40 36.2	6.5	2.5	0.17	24	23 55.8	16 15 21.75	20 34 32.0	13.1	5.0	0.35
11	0 40.6	14 2 46.33	−13 18 49.8	6.5	2.5	0.17	25	23 46.7	16 9 53.46	−20 0 19.8	13.0	4.9	0.35
12	0 42.4	14 8 29.70	13 56 19.1	6.6	2.5	0.17	26	23 37.2	16 4 30.16	19 26 36.2	12.9	4.9	0.35
13	0 44.2	14 14 12.21	14 33 2.9	6.6	2.5	0.17	27	23 28.0	15 59 22.45	18 54 20.1	12.7	4.8	0.34
14	0 45.9	14 19 53.88	15 8 59.9	6.7	2.5	0.17	28	23 19.5	15 54 39.83	18 24 27.8	12.5	4.7	0.34
15	0 47.7	14 25 34.73	15 44 9.0	6.7	2.5	0.17	29	23 11.5	15 50 30.16	17 57 48.5	12.2	4.7	0.33
16	0 49.4	14 31 14.77	−16 18 28.7	6.8	2.6	0.18	30	23 4.1	15 46 59.29	−17 35 0.4	12.0	4.6	0.33
17	0 51.1	14 36 54.02	16 51 57.6	6.8	2.6	0.18	Dec. 1	22 56.3	15 44 10.97	17 16 28.5	11.8	4.4	0.32
18	0 52.8	14 42 32.41	17 24 34.2	6.9	2.6	0.18	2	22 51.2	15 42 7.05	17 2 24.9	11.5	4.3	0.31
19	0 54.5	14 48 9.87	17 56 17.1	7.0	2.6	0.18	3	22 46.0	15 40 47.68	16 52 50.7	11.2	4.2	0.31
20	0 56.1	14 53 46.30	18 27 5.0	7.0	2.6	0.18	4	22 41.5	15 40 11.76	16 47 37.2	10.9	4.1	0.30
21	0 57.7	14 59 21.61	−18 56 56.2	7.1	2.7	0.19	5	22 37.6	15 40 17.24	−16 46 28.4	10.6	4.0	0.29
22	0 59.3	15 4 55.65	19 25 49.0	7.1	2.7	0.19	6	22 34.5	15 41 1.48	16 49 3.8	10.3	3.9	0.28
23	1 0.9	15 10 28.19	19 53 41.8	7.2	2.7	0.19	7	22 31.9	15 42 21.49	16 55 0.1	10.0	3.8	0.27
24	1 2.5	15 15 58.99	20 20 32.8	7.3	2.7	0.19	8	22 29.8	15 44 14.18	17 3 52.6	9.8	3.7	0.26
25	1 4.0	15 21 27.78	20 46 20.2	7.4	2.8	0.20	9	22 28.2	15 46 36.47	17 15 17.1	9.5	3.6	0.26
26	1 5.5	15 26 54.24	−21 11 2.0	7.5	2.8	0.20	10	22 27.1	15 49 25.41	−17 28 50.1	9.2	3.5	0.25
27	1 7.0	15 32 17.97	21 34 36.2	7.6	2.9	0.20	11	22 26.4	15 52 38.27	17 44 9.3	9.0	3.4	0.24
28	1 8.4	15 37 38.53	21 57 0.8	7.7	2.9	0.21	12	22 26.1	15 56 12.52	18 0 54.8	8.8	3.3	0.24
29	1 9.8	15 42 55.38	22 18 13.7	7.8	2.9	0.21	13	22 26.0	16 0 5.89	18 18 48.2	8.6	3.3	0.23
30	1 10.9	15 48 7.90	22 38 12.3	7.9	3.0	0.21	14	22 26.3	16 4 16.37	18 37 32.7	8.5	3.2	0.23
31	1 12.1	15 53 15.36	−22 56 54.2	8.0	3.0	0.22	15	22 26.7	16 8 42.13	−18 56 53.4	8.3	3.1	0.22
Nov. 1	1 13.2	15 58 16.95	23 14 16.7	8.2	3.1	0.22	16	22 27.5	16 13 21.56	19 16 37.3	8.1	3.1	0.22
2	1 14.2	16 3 11.76	23 30 17.2	8.3	3.2	0.22	17	22 28.4	16 18 13.25	19 36 32.7	8.0	3.0	0.22
3	1 15.1	16 7 58.70	23 44 52.8	8.5	3.2	0.23	18	22 29.4	16 23 15.97	19 56 29.2	7.8	3.0	0.21
4	1 15.7	16 12 36.60	23 58 0.5	8.6	3.3	0.23	19	22 30.7	16 28 28.64	20 16 17.6	7.7	2.9	0.21
5	1 16.3	16 17 4.06	−24 9 36.7	8.8	3.4	0.24	20	22 32.1	16 33 50.32	−20 35 50.1	7.6	2.9	0.21
6	1 16.6	16 21 19.51	24 19 37.8	9.0	3.4	0.25	21	22 33.6	16 39 20.16	20 54 59.3	7.5	2.8	0.20
7	1 16.6	16 25 21.23	24 28 0.2	9.2	3.5	0.25	22	22 35.4	16 44 57.42	21 13 39.1	7.4	2.8	0.20
8	1 16.4	16 29 7.25	24 34 39.4	9.4	3.6	0.26	23	22 37.1	16 50 41.49	21 31 43.9	7.3	2.8	0.20
9	1 16.0	16 32 35.38	24 39 30.8	9.6	3.7	0.27	24	22 39.0	16 56 31.82	21 49 8.7	7.2	2.7	0.20
10	1 15.2	16 35 43.24	−24 42 29.4	9.9	3.7	0.27	25	22 40.8	17 2 27.88	−22 5 48.8	7.1	2.7	0.19
11	1 14.0	16 38 28.22	24 43 29.7	10.1	3.8	0.28	26	22 43.0	17 8 29.23	22 21 40.4	7.0	2.6	0.19
12	1 12.4	16 40 47.46	24 42 25.6	10.4	3.9	0.28	27	22 45.3	17 14 35.49	22 36 40.1	6.9	2.6	0.19
13	1 10.3	16 42 37.91	24 39 9.9	10.6	4.0	0.29	28	22 47.5	17 20 46.31	22 50 44.4	6.9	2.6	0.19
14	1 7.7	16 43 56.52	24 33 35.3	10.9	4.1	0.29	29	22 49.8	17 27 1.37	23 3 50.4	6.8	2.5	0.19
15	1 4.5	16 44 40.11	−24 25 33.8	11.1	4.2	0.30	30	22 52.1	17 33 20.38	−23 15 55.5	6.7	2.5	0.19
16	1 0.6	16 44 45.71	−24 14 56.8	11.4	4.3	0.31	31	22 54.5	17 39 43.10	−23 26 57.3	6.7	2.5	0.19

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	21 57.4	16 43 17.08	−21 1 7.7	6.4	6.1	0.43	Feb. 15	23 1.0	20 48 26.20	−18 35 40.5	5.6	5.4	0.38
1	21 58.7	16 48 32.67	21 12 52.9	6.4	6.1	0.43	16	23 2.1	20 53 32.47	18 17 32.5	5.6	5.4	0.38
2	22 0.0	16 53 49.18	21 24 1.9	6.3	6.1	0.43	17	23 3.2	20 58 37.60	17 58 52.9	5.6	5.4	0.38
3	22 1.4	16 59 6.58	21 34 34.0	6.3	6.1	0.43	18	23 4.3	21 3 41.59	17 39 42.5	5.5	5.3	0.38
4	22 2.7	17 4 24.83	21 44 28.7	6.3	6.0	0.43	19	23 5.4	21 8 44.41	17 20 1.9	5.5	5.3	0.38
5	22 4.1	17 9 43.89	−21 53 45.5	6.2	6.0	0.43	20	23 6.5	21 13 46.07	−16 59 51.9	5.5	5.3	0.38
6	22 5.4	17 15 3.73	22 2 24.0	6.2	6.0	0.43	21	23 7.6	21 18 46.58	16 39 13.1	5.5	5.3	0.38
7	22 6.8	17 20 24.28	22 10 23.7	6.2	6.0	0.43	22	23 8.7	21 23 45.93	16 18 6.4	5.5	5.3	0.37
8	22 8.2	17 25 45.51	22 17 44.2	6.2	6.0	0.42	23	23 9.8	21 28 44.13	15 56 32.4	5.5	5.3	0.37
9	22 9.6	17 31 7.37	22 24 25.2	6.1	5.9	0.42	24	23 10.8	21 33 41.17	15 34 31.7	5.5	5.3	0.37
10	22 11.0	17 36 29.81	−22 30 26.3	6.1	5.9	0.42	25	23 11.8	21 38 37.07	−15 12 5.1	5.5	5.3	0.37
11	22 12.5	17 41 52.76	22 35 46.9	6.1	5.9	0.42	26	23 12.7	21 43 31.85	14 49 13.3	5.5	5.3	0.37
12	22 13.9	17 47 16.19	22 40 27.0	6.1	5.9	0.42	27	23 13.6	21 48 25.51	14 25 56.9	5.5	5.3	0.36
13	22 15.4	17 52 40.02	22 44 26.2	6.1	5.9	0.42	28	23 14.5	21 53 18.08	14 2 16.8	5.4	5.2	0.36
14	22 16.8	17 58 4.21	22 47 44.2	6.1	5.8	0.42	Mar. 1	23 15.4	21 58 9.57	13 38 13.6	5.4	5.2	0.36
15	22 18.3	18 3 28.67	−22 50 20.9	6.0	5.8	0.42	2	23 16.3	22 2 59.99	−13 13 48.1	5.4	5.2	0.36
16	22 19.7	18 8 53.36	22 52 16.1	6.0	5.8	0.42	3	23 17.2	22 7 49.37	12 49 1.0	5.4	5.2	0.36
17	22 21.2	18 14 18.21	22 53 29.7	6.0	5.8	0.42	4	23 18.1	22 12 37.73	12 23 53.0	5.4	5.2	0.36
18	22 22.6	18 19 43.17	22 54 1.4	6.0	5.8	0.41	5	23 19.0	22 17 25.09	11 58 24.9	5.4	5.2	0.35
19	22 24.1	18 25 8.17	22 53 51.3	6.0	5.8	0.41	6	23 19.8	22 22 11.47	11 32 37.4	5.4	5.2	0.35
20	22 25.6	18 30 33.16	−22 52 59.3	5.9	5.8	0.41	7	23 20.6	22 26 56.91	−11 6 31.1	5.4	5.2	0.35
21	22 27.1	18 35 58.07	22 51 25.5	5.9	5.7	0.41	8	23 21.4	22 31 41.42	10 40 6.8	5.4	5.2	0.35
22	22 28.6	18 41 22.85	22 49 9.9	5.9	5.7	0.41	9	23 22.2	22 36 25.05	10 13 25.4	5.4	5.2	0.35
23	22 30.1	18 46 47.42	22 46 12.5	5.9	5.7	0.41	10	23 22.9	22 41 7.80	9 46 27.4	5.3	5.1	0.35
24	22 31.6	18 52 11.74	22 42 33.5	5.9	5.7	0.41	11	23 23.7	22 45 49.72	9 19 13.7	5.3	5.1	0.35
25	22 33.0	18 57 35.76	−22 38 13.0	5.9	5.7	0.41	12	23 24.4	22 50 30.83	− 8 51 45.0	5.3	5.1	0.35
26	22 34.5	19 2 59.41	22 33 11.1	5.9	5.7	0.41	13	23 25.2	22 55 11.17	8 24 2.0	5.3	5.1	0.35
27	22 35.9	19 8 22.66	22 27 28.0	5.8	5.6	0.41	14	23 25.9	22 59 50.77	7 56 5.5	5.3	5.1	0.35
28	22 37.3	19 13 45.43	22 21 3.8	5.8	5.6	0.40	15	23 26.5	23 4 29.66	7 27 56.2	5.3	5.1	0.34
29	22 38.7	19 19 7.69	22 13 58.8	5.8	5.6	0.40	16	23 27.2	23 9 7.85	6 59 34.9	5.3	5.1	0.34
30	22 40.1	19 24 29.37	−22 6 13.3	5.8	5.6	0.40	17	23 27.9	23 13 45.40	− 6 31 2.4	5.3	5.1	0.34
31	22 41.6	19 29 50.44	21 57 47.7	5.8	5.6	0.40	18	23 28.6	23 18 22.33	6 2 19.5	5.3	5.1	0.34
Feb. 1	22 43.0	19 35 10.86	21 48 42.2	5.8	5.6	0.40	19	23 29.3	23 22 58.69	5 33 26.7	5.3	5.1	0.34
2	22 44.3	19 40 30.58	21 38 57.2	5.7	5.5	0.40	20	23 29.9	23 27 34.50	5 4 24.8	5.3	5.1	0.34
3	22 45.8	19 45 49.56	21 28 33.1	5.7	5.5	0.40	21	23 30.5	23 32 9.81	4 35 14.7	5.3	5.1	0.34
4	22 47.1	19 51 7.75	−21 17 30.2	5.7	5.5	0.39	22	23 31.1	23 36 44.65	− 4 5 56.9	5.2	5.1	0.34
5	22 48.5	19 56 25.12	21 5 49.1	5.7	5.5	0.39	23	23 31.8	23 41 19.07	3 36 32.4	5.2	5.1	0.34
6	22 49.8	20 1 41.62	20 53 30.0	5.7	5.5	0.39	24	23 32.4	23 45 53.10	3 7 1.7	5.2	5.1	0.34
7	22 51.1	20 6 57.23	20 40 33.5	5.7	5.5	0.39	25	23 33.0	23 50 26.77	2 37 25.6	5.2	5.0	0.34
8	22 52.4	20 12 11.91	20 27 0.2	5.7	5.5	0.39	26	23 33.6	23 55 0.14	2 7 44.8	5.2	5.0	0.34
9	22 53.7	20 17 25.63	−20 12 50.5	5.6	5.5	0.39	27	23 34.2	23 59 33.25	− 1 38 0.0	5.2	5.0	0.34
10	22 54.9	20 22 38.36	19 58 5.1	5.6	5.4	0.39	28	23 34.9	0 4 6.14	1 8 11.9	5.2	5.0	0.34
11	22 56.2	20 27 50.06	19 42 44.4	5.6	5.4	0.39	29	23 35.5	0 8 38.85	0 38 21.3	5.2	5.0	0.33
12	22 57.4	20 33 0.72	19 26 48.9	5.6	5.4	0.38	30	23 36.1	0 13 11.42	− 0 8 28.7	5.2	5.0	0.33
13	22 58.6	20 38 10.31	19 10 19.3	5.6	5.4	0.38	31	23 36.7	0 17 43.90	+ 0 21 25.1	5.2	5.0	0.33
14	22 59.8	20 43 18.81	−18 53 16.3	5.6	5.4	0.38	32	23 37.3	0 22 16.32	+ 0 51 19.3	5.2	5.0	0.33
15	23 1.0	20 48 26.20	−18 35 40.5	5.6	5.4	0.38	33	23 37.9	0 26 48.75	+ 1 21 13.3	5.2	5.0	0.33

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
Apr. 1	23 37.3	0 22 16.32	+ 0 51 19.3	5.2	5.0	0.33
2	23 37.9	0 26 48.75	1 21 13.3	5.2	5.0	0.33
3	23 38.4	0 31 21.21	1 51 6.4	5.2	5.0	0.33
4	23 39.0	0 35 53.76	2 20 57.8	5.2	5.0	0.33
5	23 39.6	0 40 26.42	2 50 46.9	5.2	5.0	0.33
6	23 40.2	0 44 59.25	+ 3 20 32.9	5.2	5.0	0.33
7	23 40.8	0 49 32.29	3 50 15.3	5.2	5.0	0.33
8	23 41.4	0 54 5.58	4 19 53.3	5.2	5.0	0.33
9	23 42.0	0 58 39.14	4 49 26.1	5.2	5.0	0.33
10	23 42.6	1 3 13.03	5 18 53.0	5.2	5.0	0.33
11	23 43.3	1 7 47.31	+ 5 48 13.3	5.1	5.0	0.33
12	23 43.9	1 12 22.00	6 17 26.2	5.1	5.0	0.33
13	23 44.6	1 16 57.12	6 46 30.9	5.1	5.0	0.33
14	23 45.2	1 21 32.73	7 15 26.9	5.1	5.0	0.33
15	23 45.9	1 26 8.87	7 44 13.3	5.1	5.0	0.33
16	23 46.5	1 30 45.55	+ 8 12 49.3	5.1	5.0	0.33
17	23 47.2	1 35 22.81	8 41 14.4	5.1	5.0	0.33
18	23 47.9	1 40 0.69	9 9 27.6	5.1	5.0	0.33
19	23 48.6	1 44 39.23	9 37 28.3	5.1	5.0	0.33
20	23 49.3	1 49 18.47	10 5 15.7	5.1	5.0	0.33
21	23 50.0	1 53 58.43	+10 32 49.1	5.1	4.9	0.33
22	23 50.8	1 58 39.15	11 0 7.7	5.1	4.9	0.33
23	23 51.6	2 3 20.67	11 27 10.9	5.1	4.9	0.34
24	23 52.3	2 8 3.00	11 53 57.8	5.1	4.9	0.34
25	23 53.1	2 12 46.18	12 20 27.7	5.1	4.9	0.34
26	23 53.9	2 17 30.24	+12 46 39.9	5.1	4.9	0.34
27	23 54.7	2 22 15.22	13 12 33.7	5.1	4.9	0.34
28	23 55.5	2 27 1.14	13 38 8.2	5.1	4.9	0.34
29	23 56.4	2 31 48.03	14 3 22.7	5.1	4.9	0.34
30	23 57.2	2 36 35.90	14 28 16.9	5.1	4.9	0.34
May 1	23 58.1	2 41 24.78	+14 52 49.8	5.1	4.9	0.34
2	23 59.0	2 46 14.70	15 17 0.6	5.1	4.9	0.34
3	23 59.9	2 51 5.67	15 40 48.5	5.1	4.9	0.34
5	0 0.8	2 55 57.72	16 4 13.0	5.1	4.9	0.34
6	0 1.8	3 0 50.87	16 27 18.1	5.1	4.9	0.34
7	0 2.8	3 5 45.14	+16 49 48.1	5.1	4.9	0.34
8	0 3.7	3 10 40.52	17 11 57.5	5.1	4.9	0.34
9	0 4.7	3 15 37.02	17 33 40.3	5.1	4.9	0.34
10	0 5.7	3 20 34.66	17 54 55.8	5.1	4.9	0.34
11	0 6.7	3 25 33.44	18 15 43.3	5.1	4.9	0.34
12	0 7.8	3 30 33.37	+18 36 2.2	5.1	5.0	0.34
13	0 8.8	3 35 34.43	18 55 51.9	5.1	5.0	0.34
14	0 9.9	3 40 36.62	19 15 11.4	5.1	5.0	0.35
15	0 11.0	3 45 39.95	19 34 0.2	5.1	5.0	0.35
16	0 12.1	3 50 44.41	19 52 17.4	5.1	5.0	0.35
17	0 13.2	3 55 49.99	+20 10 2.3	5.1	5.0	0.35
18	0 14.4	4 0 56.68	+20 27 14.4	5.1	5.0	0.35
May 18	0 14.4	4 0 56.68	+20 27 14.4	5.1	5.0	0.35
19	0 15.7	4 6 4.43	20 43 52.9	5.1	5.0	0.35
20	0 16.9	4 11 13.24	20 59 57.4	5.1	5.0	0.35
21	0 18.1	4 16 23.08	21 15 27.1	5.1	5.0	0 35
22	0 19.4	4 21 33.95	21 30 21.2	5.1	5.0	0.35
23	0 20.6	4 26 45.81	+21 44 39.4	5.1	5.0	0.35
24	0 21.9	4 31 58.64	21 58 21.0	5.1	5.0	0.36
25	0 23.2	4 37 12.40	22 11 25.6	5.1	5.0	0.36
26	0 24.5	4 42 27.06	22 23 52.5	5.2	5.0	0.36
27	0 25.8	4 47 42.60	22 35 41.3	5.2	5.0	0.36
28	0 27.1	4 52 58.98	+22 46 51.3	5.2	5.0	0.36
29	0 28.4	4 58 16.15	22 57 22.1	5.2	5.0	0.36
30	0 29.8	5 3 34.07	23 7 13.3	5.2	5.0	0.36
31	0 31.1	5 8 52.72	23 16 24.5	5.2	5.0	0.36
June 1	0 32.5	5 14 12.03	23 24 55.3	5.2	5.0	0.36
2	0 33.9	5 19 31.96	+23 32 45.3	5.2	5.0	0.36
3	0 35.3	5 24 52.47	23 39 54.1	5.2	5.0	0.37
4	0 36.7	5 30 13.50	23 46 21.4	5.2	5.0	0.37
5	0 38.1	5 35 35.01	23 52 7.0	5.2	5.0	0.37
6	0 39.5	5 40 56.94	23 57 10.6	5.2	5.0	0.37
7	0 40.9	5 46 19.24	+24 1 31.9	5.2	5.0	0.37
8	0 42.3	5 51 41.85	24 5 10.7	5.2	5.0	0.37
9	0 43.8	5 57 4.72	24 8 6.7	5.2	5.0	0.37
10	0 45.2	6 2 27.78	24 10 19.7	5.2	5.0	0.37
11	0 46.7	6 7 50.96	24 11 49.7	5.2	5.1	0.37
12	0 48.1	6 13 14.19	+24 12 36.7	5.2	5.1	0.37
13	0 49.6	6 18 37.43	24 12 40.5	5.2	5.1	0.37
14	0 51.0	6 24 0.60	24 12 1.2	5.3	5.1	0.37
15	0 52.4	6 29 23.64	24 10 38.8	5.3	5.1	0.37
16	0 53.8	6 34 46.49	24 8 33.2	5.3	5.1	0.37
17	0 55.3	6 40 9.10	+24 5 44.6	5.3	5.1	0.37
18	0 56.7	6 45 31.39	24 2 13.0	5.3	5.1	0.37
19	0 58.1	6 50 53.31	23 57 58.6	5.3	5.1	0.37
20	0 59.5	6 56 14.78	23 53 1.5	5.3	5.1	0.37
21	1 0.9	7 1 35.76	23 47 22.0	5.3	5.1	0.37
22	1 2.3	7 6 56.18	+23 41 0.3	5.3	5.1	0.37
23	1 3.7	7 12 16.00	23 33 56.8	5.3	5.2	0.37
24	1 5.1	7 17 35.15	23 26 11.8	5.3	5.2	0.37
25	1 6.5	7 22 53.58	23 17 46.4	5.4	5.2	0.37
26	1 7.9	7 28 11.26	23 8 38.0	5.4	5.2	0.37
27	1 9.2	7 33 28.12	+22 58 50.0	5.4	5.2	0.37
28	1 10.5	7 38 44.13	22 48 22.0	5.4	5.2	0.38
29	1 11.8	7 43 59.24	22 37 14.1	5.4	5.2	0.38
30	1 13.1	7 49 13.41	22 25 27.0	5.4	5.2	0.38
31	1 14.4	7 54 26.61	22 13 1.0	5.4	5.2	0.38
32	1 15.7	7 59 38.79	+21 59 56.9	5.4	5.2	0.38
33	1 16.9	8 4 49.94	+21 46 14.5	5.4	5.3	0.38

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	1 14.4	7 54 26.61	+22 13 1.0	5.4	5.2	0.38	Aug. 16	1 52.4	11 34 1.98	+ 4 2 50.8	6.2	6.0	0.40
2	1 15.7	7 59 38.79	21 59 56.9	5.4	5.2	0.38	17	1 52.9	11 38 26.78	3 32 16.5	6.2	6.0	0.40
3	1 16.9	8 4 49.94	21 46 14.5	5.4	5.3	0.38	18	1 53.3	11 42 51.14	3 1 36.0	6.2	6.0	0.40
4	1 18.1	8 10 0.01	21 31 55.0	5.4	5.3	0.38	19	1 53.8	11 47 15.10	2 30 50.2	6.3	6.0	0.40
5	1 19.3	8 15 8.99	21 16 58.7	5.5	5.3	0.38	20	1 54.3	11 51 38.70	1 59 59.8	6.3	6.1	0.40
6	1 20.4	8 20 16.85	+21 1 26.2	5.5	5.3	0.38	21	1 54.8	11 56 1.98	+ 1 29 5.5	6.3	6.1	0.41
7	1 21.5	8 25 23.55	20 45 17.9	5.5	5.3	0.38	22	1 55.2	12 0 24.99	0 58 7.9	6.3	6.1	0.41
8	1 22.7	8 30 29.09	20 28 34.6	5.5	5.3	0.38	23	1 55.7	12 4 47.76	+ 0 27 7.7	6.4	6.1	0.41
9	1 23.8	8 35 33.44	20 11 16.8	5.5	5.3	0.38	24	1 56.1	12 9 10.33	− 0 3 54.4	6.4	6.2	0.41
10	1 25.0	8 40 36.59	19 53 25.2	5.5	5.3	0.38	25	1 56.5	12 13 32.76	0 34 57.7	6.4	6.2	0.41
11	1 26.1	8 45 38.50	+19 35 0.5	5.5	5.3	0.38	26	1 56.9	12 17 55.08	− 1 6 1.5	6.4	6.2	0.41
12	1 27.2	8 50 39.18	19 16 3.2	5.5	5.4	0.38	27	1 57.4	12 22 17.32	1 37 5.1	6.5	6.3	0.42
13	1 28.3	8 55 38.62	18 56 34.1	5.6	5.4	0.38	28	1 57.8	12 26 39.54	2 8 7.9	6.5	6.3	0.42
14	1 29.3	9 0 36.80	18 36 33.6	5.6	5.4	0.38	29	1 58.3	12 31 1.78	2 39 9.1	6.5	6.3	0.42
15	1 30.3	9 5 33.71	18 16 2.7	5.6	5.4	0.38	30	1 58.7	12 35 24.08	3 10 8.2	6.6	6.4	0.42
16	1 31.3	9 10 29.35	+17 55 2.0	5.6	5.4	0.38	31	1 59.2	12 39 46.48	− 3 41 4.3	6.6	6.4	0.42
17	1 32.2	9 15 23.72	17 33 32.1	5.6	5.4	0.38	Sept. 1	1 59.6	12 44 9.04	4 11 57.0	6.6	6.4	0.43
18	1 33.1	9 20 16.83	17 11 33.8	5.6	5.4	0.38	2	2 0.0	12 48 31.78	4 42 45.5	6.6	6.4	0.43
19	1 34.0	9 25 8.67	16 49 7.9	5.6	5.5	0.38	3	2 0.4	12 52 54.75	5 13 29.1	6.7	6.4	0.43
20	1 34.9	9 29 59.25	16 26 15.0	5.6	5.5	0.38	4	2 0.9	12 57 18.00	5 44 7.2	6.7	6.5	0.43
21	1 35.8	9 34 48.57	+16 2 56.0	5.7	5.5	0.38	5	2 1.3	13 1 41.57	− 6 14 39.0	6.7	6.5	0.43
22	1 36.7	9 39 36.64	15 39 11.6	5.7	5.5	0.38	6	2 1.8	13 6 5.49	6 45 3.9	6.8	6.5	0.44
23	1 37.5	9 44 23.48	15 15 2.4	5.7	5.5	0.38	7	2 2.2	13 10 29.82	7 15 21.1	6.8	6.6	0.44
24	1 38.3	9 49 9.11	14 50 29.2	5.7	5.5	0.38	8	2 2.7	13 14 54.59	7 45 29.8	6.8	6.6	0.44
25	1 39.1	9 53 53.53	14 25 32.6	5.7	5.5	0.38	9	2 3.2	13 19 19.82	8 15 29.5	6.9	6.6	0.44
26	1 39 9	9 58 36.77	+14 0 13.5	5.8	5.6	0.38	10	2 3.7	13 23 45.55	− 8 45 19.5	6.9	6.7	0.45
27	1 40.7	10 3 18.85	13 34 32.6	5.8	5.6	0.38	11	2 4.2	13 28 11.83	9 14 58.8	6.9	6.7	0.45
28	1 41.4	10 7 59.80	13 8 30.7	5.8	5.6	0.38	12	2 4.7	13 32 38.67	9 44 26.9	7.0	6.7	0.45
29	1 42.1	10 12 39.65	12 42 8.3	5.8	5.6	0.38	13	2 5.2	13 37 6.12	10 13 43.1	7.0	6.8	0.46
30	1 42.8	10 17 16.41	12 15 26.2	5.8	5.6	0.38	14	2 5.7	13 41 34.21	10 42 46.6	7.0	6.8	0.46
31	1 43.5	10 21 56.12	+11 48 25.2	5.8	5.7	0.38	15	2 6.2	13 46 2.98	−11 11 36.4	7.1	6.8	0.46
Aug. 1	1 44.2	10 26 32.80	11 21 6.0	5.9	5.7	0.38	16	2 6.7	13 50 32.44	11 40 12.1	7.1	6.9	0.47
2	1 44.8	10 31 8.47	10 53 29.2	5.9	5.7	0.39	17	2 7.3	13 55 2.64	12 8 32.8	7.1	6.9	0.47
3	1 45.5	10 35 43.18	10 25 35.6	5.9	5.7	0.39	18	2 7.8	13 59 33.50	12 36 36.0	7.2	6.9	0.47
4	1 46.1	10 40 16.95	9 57 25.8	5.9	5.7	0.39	19	2 8.4	14 4 5.32	13 4 26.6	7.2	7.0	0.47
5	1 46.7	10 44 49.83	+ 9 29 0.6	5.9	5.7	0.39	20	2 9.0	14 8 37.85	−13 31 58.1	7.2	7.0	0.48
6	1 47.3	10 49 21.85	9 0 20.7	6.0	5.8	0.39	21	2 9.6	14 13 11.22	13 59 11.7	7.3	7.0	0.48
7	1 47.9	10 53 53.03	8 31 26.8	6.0	5.8	0.39	22	2 10.2	14 17 45.44	14 26 6.6	7.3	7.1	0.48
8	1 48.4	10 58 23.41	8 2 19.7	6.0	5.8	0.39	23	2 10.9	14 22 20.55	14 52 42.1	7.4	7.1	0.49
9	1 48.9	11 2 53.02	7 33 0.0	6.0	5.8	0.39	24	2 11.7	14 26 56.57	15 18 57.5	7.4	7.2	0.49
10	1 49.4	11 7 21.91	+ 7 3 28.4	6.1	5.8	0.39	25	2 12.2	14 31 33.52	−15 44 52.1	7.4	7.2	0.49
11	1 49.9	11 11 50.11	6 33 45.7	6.1	5.9	0.39	26	2 12.9	14 36 11.41	16 10 25.3	7.5	7.2	0.50
12	1 50.5	11 16 17.66	6 3 52.6	6.1	5.9	0.40	27	2 13.6	14 40 50.26	16 35 36.3	7.5	7.3	0.50
13	1 51.0	11 20 44.59	5 33 50.0	6.1	5.9	0.40	28	2 14.3	14 45 30.10	17 0 24.4	7.6	7.3	0.51
14	1 51.5	11 25 10.92	5 3 38.3	6.1	5.9	0.40	29	2 15.0	14 50 10 94	17 24 48.8	7.6	7.4	0.51
15	1 52.0	11 29 36.71	+ 4 38 18.3	6.2	5.9	0.40	30	2 15 8	14 54 52.80	−17 48 48.9	7.7	7.4	0.52
16	1 52.4	11 34 1.98	+ 4 2 50.8	6.2	6.0	0.40	31	2 16.6	14 59 35.69	−18 12 23.9	7.7	7.5	0.52

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	2 16.6	14 59 35.69	-18 12 23.9	7.7	7.5	0.52	Nov. 16	3 4.1	18 48 29.83	-25 54 36.6	10.8	10.4	0.77
2	2 17.4	15 4 19.62	18 35 33.1	7.8	7.5	0.53	17	3 5.1	18 53 23.91	25 49 0.6	10.9	10.5	0.78
3	2 18.2	15 9 4.60	18 58 15.8	7.8	7.5	0.53	18	3 6.0	18 58 16.58	25 42 44.8	11.0	10.6	0.79
4	2 19.0	15 13 50.63	19 20 31.3	7.9	7.6	0.54	19	3 6.9	19 3 7.74	25 35 49.9	11.1	10.7	0.79
5	2 19.9	15 18 37.72	19 42 18.9	7.9	7.6	0.54	20	3 7.8	19 7 57.32	25 28 16.3	11.2	10.8	0.80
6	2 20.7	15 23 25.87	-20 3 38.0	8.0	7.7	0.54	21	3 8.6	19 12 45.22	-25 20 4.6	11.3	10.9	0.80
7	2 21.6	15 28 15.06	20 24 27.7	8.0	7.7	0.55	22	3 9.4	19 17 31.38	25 11 15.3	11.4	11.0	0.81
8	2 22.5	15 33 5.29	20 44 47.5	8.1	7.8	0.55	23	3 10.2	19 22 15.73	25 1 48.9	11.5	11.1	0.82
9	2 23.4	15 37 56.55	21 4 36.4	8.1	7.8	0.56	24	3 10.9	19 26 58.19	24 51 46.0	11.6	11.2	0.82
10	2 24.3	15 42 48.83	21 23 53.9	8.2	7.9	0.56	25	3 11.6	19 31 38.70	24 41 7.3	11.8	11.4	0.83
11	2 25.3	15 47 42.12	-21 42 39.5	8.2	7.9	0.57	26	3 12.3	19 36 17.17	-24 29 53.3	11.9	11.5	0.83
12	2 26.3	15 52 36.38	22 0 52.4	8.3	8.0	0.57	27	3 13.0	19 40 53.56	24 18 4.8	12.0	11.6	0.84
13	2 27.2	15 57 31.60	22 18 31.9	8.3	8.0	0.58	28	3 13.6	19 45 27.79	24 5 42.1	12.1	11.7	0.85
14	2 28.2	16 2 27.73	22 35 37.5	8.4	8.1	0.58	29	3 14.2	19 49 59.80	23 52 46.1	12.3	11.8	0.86
15	2 29.2	16 7 24.74	22 52 8.3	8.4	8.1	0.59	30	3 14.7	19 54 29.53	23 39 17.7	12.4	12.0	0.86
16	2 30.2	16 12 22.62	-23 8 3.8	8.5	8.2	0.59	Dec. 1	3 15.2	19 58 56.91	-23 25 17.6	12.6	12.1	0.87
17	2 31.2	16 17 21.31	23 23 23.5	8.5	8.2	0.60	2	3 15.7	20 3 21.88	23 10 46.3	12.7	12.2	0.88
18	2 32.2	16 22 20.78	23 38 6.8	8.6	8.3	0.60	3	3 16.2	20 7 44.37	22 55 44.7	12.8	12.3	0.89
19	2 33.3	16 27 20.99	23 52 13.2	8.7	8.4	0.61	4	3 16.6	20 12 4.33	22 40 13.7	13.0	12.5	0.90
20	2 34.3	16 32 21.91	24 5 42.0	8.7	8.4	0.61	5	3 17.0	20 16 21.68	22 24 14.0	13.1	12.6	0.90
21	2 35.4	16 37 23.47	-24 18 32.9	8.8	8.5	0.62	6	3 17.3	20 20 36.37	-22 7 46.4	13.2	12.8	0.91
22	2 36.5	16 42 25.63	24 30 45.3	8.8	8.5	0.62	7	3 17.6	20 24 48.34	21 50 51.7	13.4	12.9	0.92
23	2 37.6	16 47 28.32	24 42 18.9	8.9	8.6	0.63	8	3 17.8	20 28 57.51	21 33 31.0	13.5	13.1	0.93
24	2 38.7	16 52 31.51	24 53 13.3	9.0	8.7	0.64	9	3 17 9	20 33 3.81	21 15 45.0	13.7	13.2	0.94
25	2 39.9	16 57 35.14	25 3 27.9	9.0	8.7	0.64	10	3 18.0	20 37 7.17	20 57 34.8	13.8	13.4	0.95
26	2 41.0	17 2 39.15	-25 13 2.6	9.1	8.8	0.65	11	3 18.1	20 41 7.53	-20 39 1.4	14.0	13.5	0.96
27	2 42.1	17 7 43.49	25 21 56.8	9.2	8.8	0.65	12	3 18.1	20 45 4.82	20 20 5.5	14.2	13.7	0.97
28	2 43.2	17 12 48.09	25 30 10.4	9.2	8.9	0.66	13	3 18.1	20 48 58.96	20 0 48.2	14.4	13.9	0.98
29	2 44.4	17 17 52.88	25 37 43.0	9.3	9.0	0.67	14	3 17.9	20 52 49.88	19 41 10.6	14.5	14.0	0.99
30	2 45.5	17 22 57.81	25 44 34.5	9.3	9.0	0.67	15	3 17.7	20 56 37.50	19 21 13.6	14.7	14.2	1.00
31	2 46.6	17 28 2.81	-25 50 44.5	9.4	9.1	0.68	16	3 17.5	21 0 21.75	-19 0 58.3	14.9	14.4	1.01
Nov. 1	2 47.7	17 33 7.82	25 56 13.0	9.5	9.2	0.68	17	3 17.2	21 4 2.55	18 40 25.7	15.0	14.5	1.02
2	2 48.9	17 38 12.75	26 0 59.7	9.6	9.3	0.69	18	3 16.9	21 7 39.83	18 19 37.0	15.2	14.7	1.03
3	2 50.0	17 43 17.54	26 5 4.5	9.7	9.4	0.70	19	3 16.6	21 11 13.52	17 58 33.2	15.4	14.9	1.04
4	2 51.1	17 48 22.11	26 8 27.2	9.7	9.5	0.70	20	3 16.2	21 14 43.52	17 37 15.3	15.6	15.1	1.06
5	2 52.2	17 53 26.38	-26 11 7.9	9.8	9.6	0.71	21	3 15.7	21 18 9.76	-17 15 44.6	15.8	15.3	1.07
6	2 53.4	17 58 30.28	26 13 6.5	9.9	9.6	0.72	22	3 15.1	21 21 32.16	16 54 2.0	16.0	15.5	1.08
7	2 54.5	18 3 33.72	26 14 23.1	10.0	9.7	0.72	23	3 14.5	21 24 50.64	16 32 8.7	16.3	15.7	1.09
8	2 55.6	18 8 36.62	26 14 57.5	10.1	9.8	0.73	24	3 13.8	21 28 5.11	16 10 5.8	16.5	15.9	1.10
9	2 56.7	18 13 38.90	26 14 50.0	10.1	9.9	0.73	25	3 13.0	21 31 15.48	15 47 54.3	16.8	16.2	1.12
10	2 57.8	18 18 40 47	-26 14 0.6	10.2	9.9	0.74	26	3 12.1	21 34 21.67	-15 25 35.6	17.0	16.4	1.13
11	2 58.9	18 23 41.23	26 12 29.6	10.3	10.0	0.74	27	3 11.2	21 37 23.57	15 3 10.7	17.2	16.6	1.14
12	3 0.0	18 28 41.09	26 10 17.0	10.4	10.1	0.75	28	3 10.2	21 40 21.08	14 40 40.9	17.4	16.8	1.15
13	3 1.1	18 33 39.96	26 7 23.1	10.5	10.2	0.76	29	3 9.2	21 43 14.11	14 18 7.2	17.7	17.1	1.17
14	3 2.1	18 38 37.77	26 3 48.2	10.6	10.3	0.76	30	3 8.1	21 46 2.56	13 55 30.9	17.9	17.3	1.18
15	3 3.1	18 43 34.42	-25 59 32.6	10.7	10.4	0.77	31	3 6.8	21 48 46.31	-13 32 53.3	18.2	17.5	1.20
16	3 4.1	18 48 29.83	-25 54 36.6	10.8	10.4	0.77	32	3 5.6	21 51 25.24	-13 10 15.5	18.5	17.8	1.21

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	6 17.0	1 0 20.57	+ 5 2 29.0	1.9	19.8	1.40	Aug. 16	18 6.6	3 50 49.79	+19 5 35.6	1.8	18.8	1.42
1	6 13.3	1 0 37.10	5 4 31.2	1.8	19.7	1.40	17	18 3.1	3 51 15.00	19 6 46.4	1.8	18.9	1.42
2	6 9.7	1 0 54.31	5 6 37.5	1.8	19.6	1.40	18	17 59.5	3 51 39.54	19 7 54.8	1.8	18.9	1.43
3	6 6.1	1 1 12.21	5 8 47.9	1.8	19.5	1.39	19	17 56.0	3 52 3.42	19 9 0.9	1.8	19.0	1.43
4	6 2.4	1 1 30.79	5 11 2.3	1.8	19.5	1.39	20	17 52.5	3 52 26.62	19 10 4.7	1.8	19.0	1.44
5	5 58.8	1 1 50.03	+ 5 13 20.7	1.8	19.4	1.38	21	17 48.9	3 52 49.15	+19 11 6.2	1.8	19.1	1.44
6	5 55.2	1 2 9.95	5 15 43.1	1.8	19.3	1.38	22	17 45.3	3 53 10.99	19 12 5.4	1.8	19.2	1.44
7	5 51.6	1 2 30.52	5 18 9.3	1.8	19.3	1.37	23	17 41.8	3 53 32.14	19 13 2.3	1.8	19.2	1.45
8	5 48.0	1 2 51.75	5 20 39.3	1.8	19.2	1.37	24	17 38.2	3 53 52.59	19 13 56.8	1.8	19.3	1.45
9	5 44.5	1 3 13.63	5 23 13.2	1.8	19.1	1.36	25	17 34.6	3 54 12.34	19 14 49.1	1.8	19.3	1.46
10	5 40.9	1 3 36.15	+ 5 25 50.8	1.8	19.1	1.36	26	17 31.0	3 54 31.37	+19 15 39.1	1.8	19.4	1.46
11	5 37.4	1 3 59.30	5 28 32.2	1.8	19.0	1.36	27	17 27.3	3 54 49.68	19 16 26.7	1.8	19.5	1.47
12	5 33.8	1 4 23.09	5 31 17.2	1.8	18.9	1.35	28	17 23.7	3 55 7.27	19 17 12.1	1.8	19.5	1.47
13	5 30.3	1 4 47.50	5 34 6.0	1.8	18.9	1.35	29	17 20.0	3 55 24.12	19 17 55.1	1.8	19.6	1.48
14	5 26.8	1 5 12.53	5 36 58.3	1.8	18.8	1.34	30	17 16.4	3 55 40.23	19 18 35.8	1.8	19.7	1.48
15	5 23.3	1 5 38.17	+ 5 39 54.2	1.8	18.8	1.34	31	17 12.7	3 55 55.60	+19 19 14.1	1.9	19.8	1.49
16	5 19.8	1 6 4.41	5 42 53.5	1.8	18.7	1.34	Sept. 1	17 9.0	3 56 10.21	19 19 50.1	1.9	19.8	1.49
17	5 16.3	1 6 31.26	5 45 56.3	1.8	18.6	1.33	2	17 5.3	3 56 24.05	19 20 23.8	1.9	19.9	1.50
18	5 12.8	1 6 58.70	5 49 2.4	1.7	18.6	1.33	3	17 1.6	3 56 37.12	19 20 55.1	1.9	20.0	1.50
19	5 9.3	1 7 26.73	5 52 11.9	1.7	18.5	1.32	4	16 57.8	3 56 49.42	19 21 24.1	1.9	20.0	1.51
20	5 5.9	1 7 55.33	+ 5 55 24.7	1.7	18.5	1.32	5	16 54.1	3 57 0.93	+19 21 50.7	1.9	20.1	1.51
21	5 2.4	1 8 24.50	5 58 40.6	1.7	18.4	1.32	6	16 50.4	3 57 11.66	19 22 14.9	1.9	20.2	1.52
22	4 59.0	1 8 54.23	6 1 59.8	1.7	18.4	1.31	7	16 46.6	3 57 21.59	19 22 36.8	1.9	20.2	1.52
23	4 55.6	1 9 24.51	6 5 22.0	1.7	18.3	1.31	8	16 42.8	3 57 30.72	19 22 56.3	1.9	20.3	1.53
24	4 52.2	1 9 55.35	6 8 47.2	1.7	18.3	1.31	9	16 39.0	3 57 39.04	19 23 13.4	1.9	20.3	1.53
25	4 48.7	1 10 26.72	+ 6 12 15.4	1.7	18.2	1.30	10	16 35.2	3 57 46.56	+19 23 28.1	1.9	20.4	1.54
26	4 45.3	1 10 58.62	6 15 46.5	1.7	18.2	1.30	11	16 31.4	3 57 53.26	19 23 40.4	1.9	20.5	1.54
27	4 41.9	1 11 31.05	6 19 20.5	1.7	18.1	1.30	12	16 27.6	3 57 59.14	19 23 50.4	1.9	20.5	1.55
28	4 38.5	1 12 4.00	6 22 57.2	1.7	18.1	1.29	13	16 23.7	3 58 4.20	19 23 58.0	1.9	20.6	1.55
29	4 35.2	1 12 37.46	+ 6 26 36.7	1.7	18.0	1.29	14	16 19.9	3 58 8.44	19 24 3.3	1.9	20.6	1.56
Aug. 1	18 58.1	3 43 17.65	+18 43 17.8	1.7	18.0	1.34	15	16 16.0	3 58 11.85	+19 24 6.2	1.9	20.7	1.56
2	18 54.7	3 43 51.82	18 45 3.0	1.7	18.1	1.35	16	16 12.1	3 58 14.43	19 24 6.7	2.0	20.8	1.57
3	18 51.3	3 44 25.46	18 46 46.0	1.7	18.1	1.35	17	16 8.2	3 58 16.18	19 24 4.9	2.0	20.8	1.57
4	18 47.9	3 44 58.55	18 48 26.7	1.7	18.2	1.36	18	16 4.3	3 58 17.11	19 24 0.7	2.0	20.9	1.58
5	18 44.6	3 45 31.08	18 50 5.1	1.7	18.2	1.36	19	16 0.3	3 58 17.21	19 23 54.2	2.0	21.0	1.58
6	18 41.1	3 46 3.05	+18 51 41.2	1.7	18.3	1.37	20	15 56.4	3 58 16.48	+19 23 45.4	2.0	21.0	1.59
7	18 37.7	3 46 34.44	18 53 15.0	1.7	18.3	1.37	21	15 52.4	3 58 14.92	19 23 34.3	2.0	21.1	1.59
8	18 34.3	3 47 5.26	18 54 46.6	1.7	18.4	1.38	22	15 48.5	3 58 12.53	19 23 20.8	2.0	21.1	1.60
9	18 30.9	3 47 35.48	18 56 15.8	1.7	18.4	1.38	23	15 44.5	3 58 9.31	19 23 5.0	2.0	21.2	1.60
10	18 27.4	3 48 5.10	18 57 42.7	1.8	18.5	1.39	24	15 40.5	3 58 5.26	19 22 46.8	2.0	21.2	1.60
11	18 24.0	3 48 34.11	+18 59 7.2	1.8	18.5	1.39	25	15 36.5	3 58 0.38	+19 22 26.3	2.0	21.3	1.61
12	18 20.5	3 49 2.51	19 0 29.5	1.8	18.6	1.40	26	15 32.5	3 57 54.67	19 22 3.5	2.0	21.4	1.61
13	18 17.1	3 49 30.28	19 1 49.6	1.8	18.6	1.40	27	15 28.4	3 57 48.13	19 21 38.4	2.0	21.4	1.61
14	18 13.6	3 49 57.43	19 3 7.2	1.8	18.7	1.41	28	15 24.3	3 57 40.77	19 21 11.0	2.0	21.5	1.62
15	18 10.1	3 50 23.93	19 4 22.6	1.8	18.8	1.41	29	15 20.3	3 57 32.58	19 20 41.2	2.0	21.6	1.62
16	18 6.6	3 50 49.79	+19 5 35.6	1.8	18.8	1.42	30	15 16.2	3 57 23.58	+19 20 9.1	2.0	21.6	1.63
17	18 3.1	3 51 15.00	+19 6 46.4	1.8	18.9	1.42	Oct. 1	15 12.1	3 57 13.74	+19 19 34.7	2.0	21.7	1.63

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Polar Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	15 12.1	3 57 13.74	+19 19 34.7	2.0	21.7	1.63	Nov. 16	11 52.1	3 38 2.36	+18 18 46.8	2.2	23.4	1.75
2	15 8.0	3 57 3.10	19 18 58.0	2.0	21.7	1.64	17	11 47.6	3 37 28.81	18 17 0.0	2.2	23.4	1.75
3	15 3.9	3 56 51.64	19 18 19.0	2.0	21.8	1.64	18	11 43.2	3 36 55.28	18 15 13.1	2.2	23.4	1.75
4	14 59.7	3 56 39.37	19 17 37.8	2.1	21.8	1.65	19	11 38.7	3 36 21.78	18 13 26.2	2.2	23.4	1.75
5	14 55.6	3 56 26.30	19 16 54.2	2.1	21.9	1.65	20	11 34.2	3 35 48.34	18 11 39.5	2.2	23.4	1.75
6	14 51.4	3 56 12.43	+19 16 8.3	2.1	22.0	1.66	21	11 29.7	3 35 14.99	+18 9 53.0	2.2	23.4	1.74
7	14 47.2	3 55 57.77	19 15 20.2	2.1	22.0	1.66	22	11 25.2	3 34 41.77	18 8 6.8	2.2	23.3	1.74
8	14 43.1	3 55 42.33	19 14 29.9	2.1	22.1	1.67	23	11 20.7	3 34 8.68	18 6 20.9	2.2	23.3	1.74
9	14 38.9	3 55 26.10	19 13 37.3	2.1	22.2	1.67	24	11 16.2	3 33 35.75	18 4 35.5	2.2	23.3	1.74
10	14 34.6	3 55 9.11	19 12 42.6	2.1	22.2	1.67	25	11 11.7	3 33 3.01	18 2 50.6	2.2	23.3	1.74
11	14 30.4	3 54 51.37	+19 11 45.7	2.1	22.3	1.68	26	11 7.2	3 32 30.47	+18 1 6.3	2.2	23.3	1.74
12	14 26.2	3 54 32.90	19 10 46.6	2.1	22.3	1.68	27	11 2.8	3 31 58.16	17 59 22.7	2.2	23.3	1.74
13	14 21.9	3 54 13.68	19 9 45.4	2.1	22.4	1.69	28	10 58.3	3 31 26.11	17 57 40.0	2.2	23.3	1.73
14	14 17.7	3 53 53.75	19 8 42.1	2.1	22.4	1.69	29	10 53.9	3 30 54.34	17 55 58.2	2.2	23.2	1.73
15	14 13.4	3 53 33.12	19 7 36.9	2.1	22.5	1.69	30	10 49.4	3 30 22.88	17 54 17.4	2.2	23.2	1.73
16	14 9.1	3 53 11.79	+19 6 29.5	2.1	22.5	1.70	Dec. 1	10 45.0	3 29 51.74	+17 52 37.7	2.2	23.2	1.73
17	14 4.8	3 52 49.78	19 5 20.2	2.1	22.6	1.70	2	10 40.5	3 29 20.95	17 50 59.1	2.2	23.2	1.73
18	14 0.5	3 52 27.12	19 4 8.9	2.1	22.6	1.70	3	10 36.1	3 28 50.54	17 49 21.7	2.2	23.1	1.72
19	13 56.2	3 52 3.81	19 2 55.6	2.1	22.7	1.70	4	10 31.6	3 28 20.52	17 47 45.8	2.2	23.1	1.72
20	13 51.9	3 51 39.87	19 1 40.6	2.1	22.7	1.71	5	10 27.2	3 27 50.92	17 46 11.3	2.2	23.1	1.72
21	13 47.5	3 51 15.30	+19 0 23.6	2.1	22.7	1.71	6	10 22.8	3 27 21.77	+17 44 38.3	2.2	23.1	1.72
22	13 43.2	3 50 50.14	18 59 4.8	2.1	22.8	1.71	7	10 18.4	3 26 53.08	17 43 6.9	2.2	23.0	1.72
23	13 38.8	3 50 24.39	18 57 44.2	2.2	22.8	1.71	8	10 14.0	3 26 24.89	17 41 37.2	2.2	23.0	1.71
24	13 34.5	3 49 58.08	18 56 21.9	2.2	22.9	1.72	9	10 9.6	3 25 57.21	17 40 9.4	2.1	22.9	1.71
25	13 30.1	3 49 31.21	18 54 57.9	2.2	22.9	1.72	10	10 5.2	3 25 30.05	17 38 43.5	2.1	22.9	1.71
26	13 25.7	3 49 3.81	+18 53 32.1	2.2	22.9	1.72	11	10 0.9	3 25 3.44	+17 37 19.5	2.1	22.8	1.70
27	13 21.3	3 48 35.90	18 52 4.8	2.2	23.0	1.72	12	9 56.5	3 24 37.40	17 35 57.6	2.1	22.8	1.70
28	13 16.9	3 48 7.49	18 50 35.9	2.2	23.0	1.73	13	9 52.1	3 24 11.94	17 34 37.8	2.1	22.7	1.70
29	13 12.5	3 47 38.59	18 49 5.4	2.2	23.0	1.73	14	9 47.8	3 23 47.08	17 33 20.3	2.1	22.7	1.69
30	13 8.1	3 47 9.24	18 47 33.5	2.2	23.1	1.73	15	9 43.5	3 23 22.84	17 32 5.0	2.1	22.6	1.69
31	13 3.6	3 46 39.45	+18 46 0.1	2.2	23.1	1.73	16	9 39.1	3 22 59.25	+17 30 52.0	2.1	22.6	1.69
Nov. 1	12 59.2	3 46 9.25	18 44 25.4	2.2	23.2	1.74	17	9 34.8	3 22 36.29	17 29 41.4	2.1	22.5	1.68
2	12 54.8	3 45 38.64	18 42 49.3	2.2	23.2	1.74	18	9 30.5	3 22 14.00	17 28 33.2	2.1	22.5	1.68
3	12 50.4	3 45 7.66	18 41 12.0	2.2	23.2	1.74	19	9 26.2	3 21 52.38	17 27 27.6	2.1	22.4	1.67
4	12 45.9	3 44 36.33	18 39 33.4	2.2	23.2	1.74	20	9 22.0	3 21 31.45	17 26 24.5	2.1	22.4	1.67
5	12 41.4	3 44 4.68	+18 37 53.8	2.2	23.2	1.74	21	9 17.7	3 21 11.21	+17 25 24.0	2.1	22.3	1.67
6	12 36.9	3 43 32.73	18 36 13.1	2.2	23.3	1.74	22	9 13.5	3 20 51.68	17 24 26.2	2.1	22.3	1.66
7	12 32.4	3 43 0.50	18 34 31.5	2.2	23.3	1.74	23	9 9.2	3 20 32.87	17 23 31.1	2.1	22.2	1.66
8	12 28.0	3 42 28.03	18 32 49.0	2.2	23.3	1.75	24	9 5.0	3 20 14.80	17 22 38.8	2.1	22.2	1.65
9	12 23.5	3 41 55.33	18 31 5.7	2.2	23.3	1.75	25	9 0.8	3 19 57.46	17 21 49.2	2.1	22.1	1.65
10	12 19.0	3 41 22.43	+18 29 21.6	2.2	23.3	1.75	26	8 56.5	3 19 40.87	+17 21 2.5	2.1	22.1	1.65
11	12 14.5	3 40 49.35	18 27 36.9	2.2	23.3	1.75	27	8 52.3	3 19 25.04	17 20 18.7	2.1	22.0	1.64
12	12 10.0	3 40 16.13	18 25 51.7	2.2	23.3	1.75	28	8 48.2	3 19 9.98	17 19 37.8	2.1	22.0	1.64
13	12 5.5	3 39 42.80	18 24 6.0	2.2	23.3	1.75	29	8 44.0	3 18 55.69	17 18 59.9	2.1	21.9	1.64
14	12 1.1	3 39 9.38	18 22 19.9	2.2	23.3	1.75	30	8 39.8	3 18 42.18	17 18 24.9	2.1	21.9	1.63
15	11 56.6	3 38 35.89	+18 20 33.5	2.2	23.4	1.75	31	8 35.7	3 18 29.47	+17 17 53.0	2.1	21.8	1.63
16	11 52.1	3 38 2.36	+18 18 46.8	2.2	23.4	1.75	32	8 31.6	3 18 17.52	+17 17 24.2	2.0	21.7	1.62

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi diam.	S.T. of Sem. Pass Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	18 4.2	12 49 33.60	−2 42 46.8	0.9	8.2	0.58	Feb. 15	15 2.8	12 49 0.04	−2 25 36.0	1.0	8.8	0.63
1	18 0.4	12 49 41.61	2 43 19.3	0.9	8.2	0.58	16	14 58.7	12 48 50.52	2 24 20.5	1.0	8.8	0.63
2	17 56.6	12 49 49.25	2 43 49.3	0.9	8.2	0.58	17	14 54.6	12 48 40.67	2 23 3.2	1.0	8.9	0.63
3	17 52.8	12 49 56.51	2 44 16.9	0.9	8.2	0.58	18	14 50.5	12 48 30.50	2 21 44.1	1.0	8.9	0.63
4	17 49.0	12 50 3.39	2 44 42.1	0.9	8.2	0.58	19	14 46.4	12 48 20.01	2 20 23.1	1.0	8.9	0.63
5	17 45.2	12 50 9.89	−2 45 4.7	0.9	8.3	0.58	20	14 42.3	12 48 9.21	−2 19 0.4	1.0	8.9	0.63
6	17 41.4	12 50 16.00	2 45 24.9	0.9	8.3	0.59	21	14 38.2	12 47 58.11	2 17 36.1	1.0	8.9	0.63
7	17 37.5	12 50 21.72	2 45 42.6	0.9	8.3	0.59	22	14 34.1	12 47 46.70	2 16 10.0	1.0	8.9	0.64
8	17 33.7	12 50 27.06	2 45 57.9	0.9	8.3	0.59	23	14 30.0	12 47 35.00	2 14 42.3	1.0	8.9	0.64
9	17 29.8	12 50 32.01	2 46 10.6	0.9	8.3	0.59	24	14 25.8	12 47 23.02	2 13 13.2	1.0	8.9	0.64
10	17 26.0	12 50 36.57	−2 46 20.8	0.9	8.3	0.59	25	14 21.7	12 47 10.76	−2 11 42.5	1.0	9.0	0.64
11	17 22.1	12 50 40.73	2 46 28.5	0.9	8.4	0.59	26	14 17.5	12 46 58.23	2 10 10.3	1.0	9.0	0.64
12	17 18.2	12 50 44.49	2 46 33.7	0.9	8.4	0.59	27	14 13.4	12 46 45.43	2 8 36.7	1.0	9.0	0.64
13	17 14.4	12 50 47.86	2 46 36.4	0.9	8.4	0.59	28	14 9.2	12 46 32.38	2 7 1.7	1.0	9.0	0.64
14	17 10.5	12 50 50.84	2 46 36.5	1.0	8.4	0.60	Mar. 1	14 5.1	12 46 19.07	2 5 25.5	1.0	9.0	0.64
15	17 6.6	12 50 53.41	−2 46 34.1	1.0	8.4	0.60	2	14 0.9	12 46 5.52	−2 3 47.9	1.0	9.0	0.64
16	17 2.7	12 50 55.58	2 46 29.2	1.0	8.4	0.60	3	13 56.8	12 45 51.73	2 2 9.1	1.0	9.0	0.64
17	16 58.8	12 50 57.36	2 46 21.9	1.0	8.4	0.60	4	13 52.6	12 45 37.71	2 0 29.1	1.0	9.0	0.64
18	16 54.9	12 50 58.73	2 46 12.0	1.0	8.5	0.60	5	13 48.5	12 45 23.46	1 58 48.0	1.0	9.0	0.64
19	16 51.0	12 50 59.71	2 45 59.6	1.0	8.5	0.60	6	13 44.3	12 45 8.99	1 57 5.7	1.0	9.0	0.64
20	16 47.0	12 51 0.28	−2 45 44.7	1.0	8.5	0.60	7	13 40.1	12 44 54.32	−1 55 22.4	1.0	9.0	0.64
21	16 43.1	12 51 0.46	2 45 27.4	1.0	8.5	0.60	8	13 35.9	12 44 39.44	1 53 38.2	1.0	9.0	0.64
22	16 39.2	12 51 0.24	2 45 7.6	1.0	8.5	0.61	9	13 31.8	12 44 24.37	1 51 53.1	1.0	9.0	0.64
23	16 35.2	12 50 59.62	2 44 45.2	1.0	8.5	0.61	10	13 27.6	12 44 9.11	1 50 7.0	1.0	9.0	0.65
24	16 31.3	12 50 58.61	2 44 20.5	1.0	8.5	0.61	11	13 23.4	12 43 53.67	1 48 20.1	1.0	9.0	0.65
25	16 27.3	12 50 57.21	−2 43 53.4	1.0	8.6	0.61	12	13 19.2	12 43 38.06	−1 46 32.5	1.0	9.1	0.65
26	16 23.4	12 50 55.41	2 43 23.8	1.0	8.6	0.61	13	13 15.0	12 43 22.30	1 44 44.1	1.0	9.1	0.65
27	16 19.4	12 50 53.23	2 42 51.9	1.0	8.6	0.61	14	13 10.8	12 43 6.38	1 42 55.1	1.0	9.1	0.65
28	16 15.4	12 50 50.65	2 42 17.6	1.0	8.6	0.61	15	13 6.6	12 42 50.31	1 41 5.5	1.0	9.1	0.65
29	16 11.5	12 50 47.68	2 41 41.0	1.0	8.6	0.62	16	13 2.4	12 42 34.11	1 39 15.4	1.0	9.1	0.65
30	16 7.5	12 50 44.33	−2 41 2.0	1.0	8.6	0.62	17	12 58.2	12 42 17.78	−1 37 24.8	1.0	9.1	0.65
31	16 3.5	12 50 40.59	2 40 20.7	1.0	8.6	0.62	18	12 54.0	12 42 1.33	1 35 33.7	1.0	9.1	0.65
Feb. 1	15 59.5	12 50 36.48	2 39 37.1	1.0	8.7	0.62	19	12 49.8	12 41 44.77	1 33 42.3	1.0	9.1	0.65
2	15 55.5	12 50 31.98	2 38 51.2	1.0	8.7	0.62	20	12 45.6	12 41 28.12	1 31 50.7	1.0	9.1	0.65
3	15 51.5	12 50 27.10	2 38 3.0	1.0	8.7	0.62	21	12 41.4	12 41 11.39	1 29 58.9	1.0	9.1	0.65
4	15 47.4	12 50 21.85	−2 37 12.6	1.0	8.7	0.62	22	12 37.1	12 40 54.57	−1 28 6.9	1.0	9.1	0.65
5	15 43.4	12 50 16.23	2 36 19.9	1.0	8.7	0.62	23	12 32.9	12 40 37.69	1 26 14.8	1.0	9.1	0.65
6	15 39.4	12 50 10.23	2 35 25.0	1.0	8.7	0.62	24	12 28.7	12 40 20.76	1 24 22.7	1.0	9.1	0.65
7	15 35.3	12 50 3.86	2 34 28.0	1.0	8.7	0.63	25	12 24.5	12 40 3.77	1 22 30.7	1.0	9.1	0.65
8	15 31.3	12 49 57.13	2 33 28.8	1.0	8.7	0.63	26	12 20.3	12 39 46.73	1 20 38.7	1.0	9.1	0.65
9	15 27.2	12 49 50.03	−2 32 27.4	1.0	8.8	0.63	27	12 16.1	12 39 29.67	−1 18 46.9	1.0	9.1	0.65
10	15 23.2	12 49 42.58	2 31 24.0	1.0	8.8	0.63	28	12 11.9	12 39 12.58	1 16 55.3	1.0	9.1	0.65
11	15 19.1	12 49 34.76	2 30 18.4	1.0	8.8	0.63	29	12 7.6	12 38 55.48	1 15 4.0	1.0	9.1	0.65
12	15 15.0	12 49 26.60	2 29 10.8	1.0	8.8	0.63	30	12 3.4	12 38 38.38	1 13 12.9	1.0	9.1	0.65
13	15 11.0	12 49 18.09	2 28 1.2	1.0	8.8	0.63	31	11 59.2	12 38 21.28	1 11 22.2	1.0	9.1	0.65
14	15 6.9	12 49 9.24	−2 26 49.6	1.0	8.8	0.63	Apr. 1	11 55.0	12 38 4.19	−1 9 32.0	1.0	9.1	0.65
15	15 2.8	12 49 0.04	−2 25 36.0	1.0	8.8	0.63	2	11 50.8	12 37 47.12	−1 7 42.3	1.0	9.1	0.65

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 1	11 55.0	12 38 4.19	−1 9 32.0	1.0	9.1	0.65	May 16	8 47.7	12 27 42.79	−0 8 11.2	1.0	8.8	0.63
2	11 50.8	12 37 47.12	1 7 42.3	1.0	9.1	0.65	17	8 43.7	12 27 34.77	0 7 32.5	1.0	8.8	0.62
3	11 46.6	12 37 30.08	1 5 53.1	1.0	9.1	0.65	18	8 39.6	12 27 27.08	0 6 56.2	1.0	8.7	0.62
4	11 42.3	12 37 13.08	1 4 4.5	1.0	9.1	0.65	19	8 35.6	12 27 19.74	0 6 22.2	1.0	8.7	0.62
5	11 38.1	12 36 56.12	1 2 16.6	1.0	9.1	0.65	20	8 31.5	12 27 12.73	0 5 50.6	1.0	8.7	0.62
6	11 33.9	12 36 39.22	−1 0 29.4	1.0	9.1	0.65	21	8 27.5	12 27 6.06	−0 5 21.4	1.0	8.7	0.62
7	11 29.7	12 36 22.39	0 58 42.9	1.0	9.1	0.65	22	8 23.4	12 26 59.74	0 4 54.6	1.0	8.7	0.62
8	11 25.5	12 36 5.63	0 56 57.3	1.0	9.1	0.65	23	8 19.4	12 26 53.77	0 4 30.2	1.0	8.7	0.62
9	11 21.3	12 35 48.96	0 55 12.6	1.0	9.1	0.65	24	8 15.4	12 26 48.15	0 4 8.2	1.0	8.7	0.62
10	11 17.1	12 35 32.37	0 53 28.8	1.0	9.1	0.65	25	8 11.4	12 26 42.88	0 3 48.6	1.0	8.7	0.62
11	11 12.9	12 35 15.89	−0 51 45.9	1.0	9.1	0.65	26	8 7.3	12 26 37.97	−0 3 31.4	1.0	8.6	0.62
12	11 8.7	12 34 59.52	0 50 4.0	1.0	9.1	0.65	27	8 3.3	12 26 33.41	0 3 16.6	1.0	8.6	0.62
13	11 4.5	12 34 43.27	0 48 23.3	1.0	9.1	0.65	28	7 59.3	12 26 29.21	0 3 4.1	1.0	8.6	0.61
14	11 0.3	12 34 27.15	0 46 43.8	1.0	9.1	0.65	29	7 55.3	12 26 25.37	0 2 54.1	1.0	8.6	0.61
15	10 56.1	12 34 11.16	0 45 5.4	1.0	9.1	0.65	30	7 51.3	12 26 21.88	0 2 46.5	1.0	8.6	0.61
16	10 51.9	12 33 55.31	−0 43 28.3	1.0	9.0	0.65	31	7 47.4	12 26 18.76	−0 2 41.4	1.0	8.6	0.61
17	10 47.7	12 33 39.61	0 41 52.5	1.0	9.0	0.65	June 1	7 43.4	12 26 16.00	0 2 38.6	1.0	8.6	0.61
18	10 43.5	12 33 24.08	0 40 18.1	1.0	9.0	0.65	2	7 39.4	12 26 13.60	0 2 38.3	1.0	8.5	0.61
19	10 39.3	12 33 8.73	0 38 45.1	1.0	9.0	0.64	3	7 35.4	12 26 11.57	0 2 40.4	1.0	8.5	0.61
20	10 35.1	12 32 53.55	0 37 13.6	1.0	9.0	0.64	4	7 31.5	12 26 9.90	0 2 45.0	1.0	8.5	0.61
21	10 31.0	12 32 38.56	−0 35 43.6	1.0	9.0	0.64	5	7 27.5	12 26 8.59	−0 2 52.0	1.0	8.5	0.61
22	10 26.8	12 32 23.75	0 34 15.2	1.0	9.0	0.64	6	7 23.6	12 26 7.65	0 3 1.3	1.0	8.5	0.60
23	10 22.6	12 32 9.15	0 32 48.3	1.0	9.0	0.64	7	7 19.6	12 26 7.08	0 3 13.1	1.0	8.5	0.60
24	10 18.4	12 31 54.76	0 31 23.1	1.0	9.0	0.64	8	7 15.7	12 26 6.87	0 3 27.3	1.0	8.5	0.60
25	10 14.3	12 31 40.58	0 29 59.6	1.0	9.0	0.64	9	7 11.8	12 26 7.03	0 3 44.0	1.0	8.4	0.60
26	10 10.1	12 31 26.62	−0 28 37.8	1.0	9.0	0.64	10	7 7.9	12 26 7.56	−0 4 3.1	1.0	8.4	0.60
27	10 5.9	12 31 12.89	0 27 17.7	1.0	9.0	0.64	11	7 4.0	12 26 8.47	0 4 24.7	1.0	8.4	0.60
28	10 1.8	12 30 59.40	0 25 59.4	1.0	9.0	0.64	12	7 0.0	12 26 9.74	0 4 48.6	1.0	8.4	0.60
29	9 57.6	12 30 46.14	0 24 42.9	1.0	9.0	0.64	13	6 56.1	12 26 11.38	0 5 15.0	1.0	8.4	0.60
30	9 53.5	12 30 33.13	0 23 28.3	1.0	8.9	0.64	14	6 52.2	12 26 13.39	0 5 43.8	0.9	8.4	0.60
May 1	9 49.3	12 30 20.36	−0 22 15.6	1.0	8.9	0.64	15	6 48.3	12 26 15.77	−0 6 14.9	0.9	8.4	0.59
2	9 45.2	12 30 7.86	0 21 4.8	1.0	8.9	0.64	16	6 44.5	12 26 18.52	0 6 48.5	0.9	8.3	0.59
3	9 41.1	12 29 55.62	0 19 55.9	1.0	8.9	0.64	17	6 40.6	12 26 21.64	0 7 24.4	0.9	8.3	0.59
4	9 36.9	12 29 43.65	0 18 49.0	1.0	8.9	0.64	18	6 36.7	12 26 25.13	0 8 2.6	0.9	8.3	0.59
5	9 32.8	12 29 31.95	0 17 44.1	1.0	8.9	0.63	19	6 32.8	12 26 28.98	0 8 43.3	0.9	8.3	0.59
6	9 28.7	12 29 20.53	−0 16 41.3	1.0	8.9	0.63	20	6 29.0	12 26 33.20	−0 9 26.3	0.9	8.3	0.59
7	9 24.6	12 29 9.40	0 15 40.5	1.0	8.9	0.63	21	6 25.1	12 26 37.78	0 10 11.6	0.9	8.3	0.59
8	9 20.4	12 28 58.55	0 14 41.9	1.0	8.9	0.63	22	6 21.3	12 26 42.71	0 10 59.2	0.9	8.3	0.59
9	9 16.3	12 28 48.00	0 13 45.3	1.0	8.9	0.63	23	6 17.4	12 26 48.01	0 11 49.1	0.9	8.2	0.59
10	9 12.2	12 28 37.75	0 12 50.8	1.0	8.8	0.63	24	6 13.6	12 26 53.67	0 12 41.2	0.9	8.2	0.58
11	9 8.1	12 28 27.80	−0 11 58.6	1.0	8.8	0.63	25	6 9.7	12 26 59.68	−0 13 35.6	0.9	8.2	0.58
12	9 4.0	12 28 18.16	0 11 8.6	1.0	8.8	0.63	26	6 5.9	12 27 6.04	0 14 32.3	0.9	8.2	0.58
13	9 0.0	12 28 8.84	0 10 20.9	1.0	8.8	0.63	27	6 2.1	12 27 12.76	0 15 31.2	0.9	8.2	0.58
14	8 55.9	12 27 59.83	0 9 35.4	1.0	8.8	0.63	28	5 58.3	12 27 19.83	0 16 32.3	0.9	8.2	0.58
15	8 51.8	12 27 51.15	0 8 52.1	1.0	8.8	0.63	29	5 54.5	12 27 27.24	0 17 35.6	0.9	8.2	0.58
16	8 47.7	12 27 42.79	−0 8 11.2	1.0	8.8	0.63	30	5 50.7	12 27 35.01	−0 18 41.0	0.9	8.2	0.58
17	8 43.7	12 27 34.77	−0 7 32.5	1.0	8.8	0.62	July 1	5 46.9	12 27 43.12	−0 19 46.6	0.9	8.1	0.58

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
Jan. 18	18 36.3	14 32 40.19	−14 32 4.2	0.5	1.8	0.12
19	18 32.5	14 32 45.45	14 32 28.3	0.5	1.8	0.12
20	18 28.6	14 32 50.50	14 32 51.5	0.5	1.8	0.12
21	18 24.8	14 32 55.35	14 33 13.6	0.5	1.8	0.12
22	18 20.9	14 32 59.98	14 33 34.7	0.5	1.8	0.12
23	18 17.0	14 33 4.40	−14 33 54.7	0.5	1.8	0.12
24	18 13.2	14 33 8.62	14 34 13.8	0.5	1.8	0.12
25	18 9.3	14 33 12.62	14 34 31.9	0.5	1.8	0.12
26	18 5.5	14 33 16.41	14 34 48.9	0.5	1.8	0.12
27	18 1.6	14 33 19.99	14 35 4.9	0.5	1.8	0.12
28	17 57.7	14 33 23.36	−14 35 19.9	0.5	1.8	0.12
29	17 53.8	14 33 26.51	14 35 33.9	0.5	1.8	0.12
30	17 49.9	14 33 29.44	14 35 46.8	0.5	1.8	0.12
31	17 46.1	14 33 32.16	14 35 58.7	0.5	1.8	0.12
Feb. 1	17 42.2	14 33 34.67	14 36 9.6	0.5	1.8	0.12
2	17 38.3	14 33 36.96	−14 36 19.5	0.5	1.8	0.12
3	17 34.4	14 33 39.03	14 36 28.3	0.5	1.8	0.13
4	17 30.5	14 33 40.80	14 36 36.1	0.5	1.8	0.13
5	17 26.6	14 33 42.53	14 36 42.9	0.5	1.8	0.13
6	17 22.7	14 33 43.95	14 36 48.6	0.5	1.8	0.13
7	17 18.7	14 33 45.16	−14 36 53.3	0.5	1.8	0.13
8	17 14.8	14 33 46.15	14 36 57.0	0.5	1.8	0.13
9	17 10.9	14 33 46.92	14 36 59.7	0.5	1.8	0.13
10	17 7.0	14 33 47.48	14 37 1.3	0.5	1.8	0.13
11	17 3.1	14 33 47.82	14 37 1.8	0.5	1.8	0.13
12	16 59.1	14 33 47.94	−14 37 1.3	0.5	1.8	0.13
13	16 55.2	14 33 47.84	14 36 59.8	0.5	1.8	0.13
14	16 51.3	14 33 47.53	14 36 57.3	0.5	1.8	0.13
15	16 47.3	14 33 47.00	14 36 53.7	0.5	1.8	0.13
16	16 43.4	14 33 46.25	14 36 49.1	0.5	1.8	0.13
17	16 39.4	14 33 45.30	−14 36 43.5	0.5	1.8	0.13
18	16 35.5	14 33 44.12	14 36 36.9	0.5	1.8	0.13
19	16 31.5	14 33 42.73	14 36 29.3	0.5	1.8	0.13
20	16 27.6	14 33 41.14	14 36 20.7	0.5	1.8	0.13
21	16 23.6	14 33 39.33	14 36 11.1	0.5	1.8	0.13
22	16 19.6	14 33 37.32	−14 36 0.5	0.5	1.8	0.13
23	16 15.7	14 33 35.09	14 35 48.9	0.5	1.8	0.13
24	16 11.7	14 33 32.66	14 35 36.4	0.5	1.8	0.13
25	16 7.7	14 33 30.03	14 35 22.9	0.5	1.9	0.13
26	16 3.7	14 33 27.19	14 35 8.5	0.5	1.9	0.13
27	15 59.8	14 33 24.16	−14 34 53.1	0.5	1.9	0.13
28	15 55.8	14 33 20.92	14 34 36.8	0.5	1.9	0.13
Mar. 1	15 51.8	14 33 17.49	14 34 19.5	0.5	1.9	0.13
2	15 47.8	14 33 13.86	14 34 1.3	0.5	1.9	0.13
3	15 43.8	14 33 10.04	14 33 42.2	0.5	1.9	0.13
4	15 39.8	14 33 6.02	−14 33 22.1	0.5	1.9	0.13
5	15 35.8	14 33 1.81	−14 33 1.2	0.5	1.9	0.13
Mar. 4	15 39.8	14 33 6.02	−14 33 22.1	0.5	1.9	0.13
5	15 35.8	14 33 1.81	14 33 1.2	0.5	1.9	0.13
6	15 31.8	14 32 57.41	14 32 39.4	0.5	1.9	0.13
7	15 27.8	14 32 52.83	14 32 16.7	0.5	1.9	0.13
8	15 23.8	14 32 48.06	14 31 53.1	0.5	1.9	0.13
9	15 19.8	14 32 43.11	−14 31 28.6	0.5	1.9	0.13
10	15 15.7	14 32 37.97	14 31 3.3	0.5	1.9	0.13
11	15 11.7	14 32 32.65	14 30 37.1	0.5	1.9	0.13
12	15 7.7	14 32 27.16	14 30 10.1	0.5	1.9	0.13
13	15 3.7	14 32 21.50	14 29 42.3	0.5	1.9	0.13
14	14 59.6	14 32 15.66	−14 29 13.6	0.5	1.9	0.13
15	14 55.6	14 32 9.65	14 28 44.1	0.5	1.9	0.13
16	14 51.6	14 32 3.48	14 28 13.9	0.5	1.9	0.13
17	14 47.5	14 31 57.15	14 27 42.9	0.5	1.9	0.13
18	14 43.5	14 31 50.65	14 27 11.1	0.5	1.9	0.13
19	14 39.5	14 31 43.99	−14 26 38.6	0.5	1.9	0.13
20	14 35.4	14 31 37.18	14 26 5.3	0.5	1.9	0.13
21	14 31.4	14 31 30.23	14 25 31.3	0.5	1.9	0.13
22	14 27.3	14 31 23.13	14 24 56.6	0.5	1.9	0.13
23	14 23.3	14 31 15.88	14 24 21.2	0.5	1.9	0.13
24	14 19.2	14 31 8.49	−14 23 45.2	0.5	1.9	0.13
25	14 15.2	14 31 0.97	14 23 8.6	0.5	1.9	0.13
26	14 11.1	14 30 53.31	14 22 31.2	0.5	1.9	0.13
27	14 7.0	14 30 45.52	14 21 53.2	0.5	1.9	0.13
28	14 3.0	14 30 37.60	14 21 14.7	0.5	1.9	0.13
29	13 58.9	14 30 29.57	−14 20 35.6	0.5	1.9	0.13
30	13 54.8	14 30 21.41	14 19 55.9	0.5	1.9	0.13
31	13 50.8	14 30 13.14	14 19 15.7	0.5	1.9	0.13
Apr. 1	13 46.7	14 30 4.75	14 18 34.9	0.5	1.9	0.13
2	13 42.6	14 29 56.26	14 17 53.6	0.5	1.9	0.13
3	13 38.6	14 29 47.66	−14 17 11.7	0.5	1.9	0.13
4	13 34.5	14 29 38.96	14 16 29.4	0.5	1.9	0.13
5	13 30.4	14 29 30.17	14 15 46.6	0.5	1.9	0.13
6	13 26.3	14 29 21.28	14 15 3.4	0.5	1.9	0.13
7	13 22.2	14 29 12.29	14 14 19.7	0.5	1.9	0.13
8	13 18.1	14 29 3.22	−14 13 35.5	0.5	1.9	0.13
9	13 14.1	14 28 54.07	14 12 51.0	0.5	1.9	0.13
10	13 10.0	14 28 44.84	14 12 6.2	0.5	1.9	0.13
11	13 5.9	14 28 35.53	14 11 20.9	0.5	1.9	0.13
12	13 1.8	14 28 26.15	14 10 35.3	0.5	1.9	0.13
13	12 57.7	14 28 16.71	−14 9 49.3	0.5	1.9	0.13
14	12 53.6	14 28 7.20	14 9 3.1	0.5	1.9	0.13
15	12 49.5	14 27 57.63	14 8 16.6	0.5	1.9	0.13
16	12 45.4	14 27 48.01	14 7 29.8	0.5	1.9	0.13
17	12 41.4	14 27 38.35	14 6 42.8	0.5	1.9	0.13
18	12 37.3	14 27 28.63	−14 5 55.6	0.5	1.9	0.13
19	12 33.2	14 27 18.88	−14 5 8.1	0.5	1.9	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 18	12 37.3	14 27 28.63	−14 5 55.6	0.5	1.9	0.13	June 2	9 33.4	14 20 32.79	−13 32 15.2	0.5	1.9	0.13
19	12 33.2	14 27 18.88	14 5 8.1	0.5	1.9	0.13	3	9 29.4	14 20 25.42	13 31 39.7	0.5	1.9	0.13
20	12 29.1	14 27 9.09	14 4 20.5	0.5	1.9	0.13	4	9 25.3	14 20 18.18	13 31 4.9	0.5	1.9	0.13
21	12 25.0	14 26 59.27	14 3 32.7	0.5	1.9	0.13	5	9 21.3	14 20 11.09	13 30 30.7	0.5	1.9	0.13
22	12 20.9	14 26 49.42	14 2 44.8	0.5	1.9	0.13	6	9 17.2	14 20 4.13	13 29 57.3	0.5	1.9	0.13
23	12 16.8	14 26 39.55	−14 1 56.8	0.5	1.9	0.13	7	9 13.2	14 19 57.32	−13 29 24.6	0.5	1.9	0.13
24	12 12.7	14 26 29.66	14 1 8.7	0.5	1.9	0.13	8	9 9.1	14 19 50.65	13 28 52.7	0.5	1.9	0.13
25	12 8.6	14 26 19.77	14 0 20.5	0.5	1.9	0.13	9	9 5.1	14 19 44.13	13 28 21.5	0.5	1.9	0.13
26	12 4.5	14 26 9.86	13 59 32.3	0.5	1.9	0.13	10	9 1.1	14 19 37.76	13 27 51.0	0.5	1.9	0.13
27	12 0.4	14 25 59.94	13 58 44.0	0.5	1.9	0.13	11	8 57.0	14 19 31.55	13 27 21.4	0.5	1.9	0.13
28	11 56.3	14 25 50.02	−13 57 55.8	0.5	1.9	0.13	12	8 53.0	14 19 25.49	−13 26 52.5	0.5	1.9	0.13
29	11 52.2	14 25 40.10	13 57 7.5	0.5	1.9	0.13	13	8 49.0	14 19 19.60	13 26 24.5	0.5	1.9	0.13
30	11 48.1	14 25 30.19	13 56 19.3	0.5	1.9	0.13	14	8 44.9	14 19 13.86	13 25 57.2	0.5	1.9	0.13
May 1	11 44.0	14 25 20.29	13 55 31.1	0.5	1.9	0.13	15	8 40.9	14 19 8.29	13 25 30.8	0.5	1.9	0.13
2	11 39.9	14 25 10.40	13 54 43.0	0.5	1.9	0.13	16	8 36.9	14 19 2.89	13 25 5.3	0.5	1.9	0.13
3	11 35.8	14 25 0.53	−13 53 55.0	0.5	1.9	0.13	17	8 32.9	14 18 57.66	−13 24 40.6	0.5	1.9	0.13
4	11 31.7	14 24 50.69	13 53 7.1	0.5	1.9	0.13	18	8 28.8	14 18 52.59	13 24 16.9	0.5	1.9	0.13
5	11 27.6	14 24 40.87	13 52 19.3	0.5	1.9	0.13	19	8 24.8	14 18 47.70	13 23 54.0	0.5	1.9	0.13
6	11 23.5	14 24 31.07	13 51 31.7	0.5	1.9	0.13	20	8 20.8	14 18 42.99	13 23 31.9	0.5	1.9	0.13
7	11 19.4	14 24 21.32	13 50 44.2	0.5	1.9	0.13	21	8 16.8	14 18 38.45	13 23 10.8	0.5	1.9	0.13
8	11 15.3	14 24 11.60	−13 49 56.9	0.5	1.9	0.13	22	8 12.8	14 18 34.09	−13 22 50.6	0.5	1.9	0.13
9	11 11.3	14 24 1.92	13 49 9.8	0.5	1.9	0.13	23	8 8.8	14 18 29.91	13 22 31.3	0.5	1.9	0.13
10	11 7.2	14 23 52.29	13 48 23.0	0.5	1.9	0.13	24	8 4.8	14 18 25.91	13 22 13.0	0.5	1.9	0.13
11	11 3.1	14 23 42.72	13 47 36.4	0.5	1.9	0.13	25	8 0.8	14 18 22.10	13 21 55.5	0.5	1.9	0.13
12	10 59.0	14 23 33.20	13 46 50.0	0.5	1.9	0.13	26	7 56.8	14 18 18.46	13 21 39.0	0.5	1.9	0.13
13	10 54.9	14 23 23.73	−13 46 4.0	0.5	1.9	0.13	27	7 52.8	14 18 15.02	−13 21 23.4	0.5	1.9	0.13
14	10 50.8	14 23 14.32	13 45 18.3	0.5	1.9	0.13	28	7 48.8	14 18 11.76	13 21 8.8	0.5	1.9	0.13
15	10 46.7	14 23 4.99	13 44 32.9	0.5	1.9	0.13	29	7 44.9	14 18 8.68	13 20 55.2	0.5	1.9	0.13
16	10 42.6	14 22 55.73	13 43 47.9	0.5	1.9	0.13	30	7 40.9	14 18 5.79	13 20 42.5	0.5	1.9	0.13
17	10 38.6	14 22 46.54	13 43 3.2	0.5	1.9	0.13	July 1	7 36.9	14 18 3.09	13 20 30.8	0.5	1.9	0.13
18	10 34.5	14 22 37.43	−13 42 19.0	0.5	1.9	0.13	2	7 32.9	14 18 0.59	−13 20 20.0	0.5	1.9	0.13
19	10 30.4	14 22 28.41	13 41 35.1	0.5	1.9	0.13	3	7 29.0	14 17 58.28	13 20 10.2	0.5	1.8	0.13
20	10 26.3	14 22 19.48	13 40 51.7	0.5	1.9	0.13	4	7 25.0	14 17 56.15	13 20 1.4	0.5	1.8	0.13
21	10 22.2	14 22 10.63	13 40 8.9	0.5	1.9	0.13	5	7 21.0	14 17 54.23	13 19 53.6	0.5	1.8	0.13
22	10 18.2	14 22 1.88	13 39 26.3	0.5	1.9	0.13	6	7 17.1	14 17 52.50	13 19 46.8	0.5	1.8	0.13
23	10 14.1	14 21 53.23	−13 38 44.4	0.5	1.9	0.13	7	7 13.1	14 17 50.96	−13 19 41.0	0.5	1.8	0.13
24	10 10.0	14 21 44.68	13 38 2.9	0.5	1.9	0.13	8	7 9.2	14 17 49.62	13 19 36.2	0.5	1.8	0.13
25	10 5.9	14 21 36.23	13 37 22.0	0.5	1.9	0.13	9	7 5.2	14 17 48.48	13 19 32.4	0.5	1.8	0.13
26	10 1.9	14 21 27.89	13 36 41.5	0.5	1.9	0.13	10	7 1.3	14 17 47.54	13 19 29.6	0.5	1.8	0.13
27	9 57.8	14 21 19.66	13 36 1.7	0.5	1.9	0.13	11	6 57.3	14 17 46.80	13 19 27.8	0.5	1.8	0.13
28	9 53.7	14 21 11.55	−13 35 22.4	0.5	1.9	0.13	12	6 53.4	14 17 46.26	−13 19 27.1	0.5	1.8	0.13
29	9 49.6	14 21 3.55	13 34 43.7	0.5	1.9	0.13	13	6 49.4	14 17 45.92	13 19 27.4	0.5	1.8	0.13
30	9 45.6	14 20 55.67	13 34 5.7	0.5	1.9	0.13	14	6 45.5	14 17 45.79	13 19 28.7	0.5	1.8	0.13
31	9 41.5	14 20 47.92	13 33 28.2	0.5	1.9	0.13	15	6 41.6	14 17 45.86	13 19 31.1	0.5	1.8	0.13
June 1	9 37.5	14 20 40.29	13 32 51.4	0.5	1.9	0.13	16	6 37.6	14 17 46.13	13 19 34.5	0.5	1.8	0.13
2	9 33.4	14 20 32.79	−13 32 15.2	0.5	1.9	0.13	17	6 33.7	14 17 46.60	−13 19 38.9	0.5	1.8	0.13
3	9 29.4	14 20 25.42	−13 31 39.7	0.5	1.9	0.13	18	6 29.8	14 17 47.27	−13 19 44.4	0.5	1.8	0.12

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	9 46.6	4 30 35.12	+20 15 5.5	0.3	1.3	0.09	Feb. 14	6 47.2	4 28 5.17	+20 11 55.2	0.3	1.3	0.09
1	9 42.6	4 30 29.33	20 14 55.2	0.3	1.3	0.09	15	6 43.3	4 28 4.89	20 11 58.1	0.3	1.3	0.09
2	9 38.6	4 30 23.62	20 14 45.1	0.3	1.3	0.09	16	6 39.3	4 28 4.74	20 12 1.4	0.3	1.3	0.09
3	9 34.5	4 30 18.00	20 14 35.3	0.3	1.3	0.09	17	6 35.4	4 28 4.75	20 12 5.0	0.3	1.3	0.09
4	9 30.5	4 30 12.47	20 14 25.7	0.3	1.3	0.09	18	6 31.5	4 28 4.89	20 12 8.9	0.3	1.3	0.09
5	9 26.5	4 30 7.02	+20 14 16.3	0.3	1.3	0.09	19	6 27.5	4 28 5.18	+20 12 13.2	0.3	1.3	0.09
6	9 22.5	4 30 1.67	20 14 7.1	0.3	1.3	0.09	20	6 23.6	4 28 5.62	20 12 17.8	0.3	1.3	0.09
7	9 18.5	4 29 56.41	20 13 58.2	0.3	1.3	0.09	21	6 19.7	4 28 6.20	20 12 22.7	0.3	1.3	0.09
8	9 14.5	4 29 51.26	20 13 49.6	0.3	1.3	0.09	22	6 15.8	4 28 6.92	20 12 27.9	0.3	1.3	0.09
9	9 10.4	4 29 46.21	20 13 41.2	0.3	1.3	0.09	23	6 11.9	4 28 7.80	20 12 33.5	0.3	1.3	0.09
10	9 6.4	4 29 41.26	+20 13 33.1	0.3	1.3	0.09	24	6 8.0	4 28 8.81	+20 12 39.3	0.3	1.3	0.09
11	9 2.4	4 29 36.41	20 13 25.2	0.3	1.3	0.09	25	6 4.0	4 28 9.97	20 12 45.5	0.3	1.3	0.09
12	8 58.4	4 29 31.67	20 13 17.6	0.3	1.3	0.09	26	6 0.1	4 28 11.27	20 12 52.0	0.3	1.3	0.09
13	8 54.4	4 29 27.02	20 13 10.2	0.3	1.3	0.09	27	5 56.2	4 28 12.72	20 12 58.8	0.3	1.3	0.09
14	8 50.4	4 29 22.50	20 13 3.1	0.3	1.3	0.09	28	5 52.3	4 28 14.31	20 13 5.9	0.3	1.3	0.09
15	8 46.4	4 29 18.09	+20 12 56.4	0.3	1.3	0.09	Sept. 1	18 2.0	4 49 15.78	+20 55 28.1	0.3	1.3	0.09
16	8 42.4	4 29 13.80	20 12 49.9	0.3	1.3	0.09	2	17 58.0	4 49 17.68	20 55 28.6	0.3	1.3	0.09
17	8 38.4	4 29 9.62	20 12 43.7	0.3	1.3	0.09	3	17 54.1	4 49 19.44	20 55 28.8	0.3	1.3	0.09
18	8 34.4	4 29 5.57	20 12 37.7	0.3	1.3	0.09	4	17 50.2	4 49 21.05	20 55 28.8	0.3	1.3	0.09
19	8 30.4	4 29 1.63	20 12 32.1	0.3	1.3	0.09	5	17 46.3	4 49 22.54	20 55 28.6	0.3	1.3	0.09
20	8 26.4	4 28 57.81	+20 12 26.7	0.3	1.3	0.09	6	17 42.4	4 49 23.87	+20 55 28.1	0.3	1.3	0.09
21	8 22.4	4 28 54.10	20 12 21.7	0.3	1.3	0.09	7	17 38.5	4 49 25.07	20 55 27.3	0.3	1.3	0.09
22	8 18.4	4 28 50.53	20 12 17.0	0.3	1.3	0.09	8	17 34.6	4 49 26.12	20 55 26.3	0.3	1.3	0.09
23	8 14.4	4 28 47.09	20 12 12.6	0.3	1.3	0.09	9	17 30.7	4 49 27.03	20 55 25.1	0.3	1.3	0.09
24	8 10.4	4 28 43.77	20 12 8.4	0.3	1.3	0.09	10	17 26.8	4 49 27.80	20 55 23.7	0.3	1.3	0.09
25	8 6.4	4 28 40.58	+20 12 4.6	0.3	1.3	0.09	11	17 22.8	4 49 28.43	+20 55 21.9	0.3	1.3	0.09
26	8 2.5	4 28 37.52	20 12 1.1	0.3	1.3	0.09	12	17 18.9	4 49 28.91	20 55 20.0	0.3	1.3	0.09
27	7 58.5	4 28 34.59	20 11 57.9	0.3	1.3	0.09	13	17 15.0	4 49 29.25	20 55 17.8	0.3	1.3	0.09
28	7 54.5	4 28 31.79	20 11 55.1	0.3	1.3	0.09	14	17 11.1	4 49 29.45	20 55 15.4	0.3	1.3	0.09
29	7 50.5	4 28 29.12	20 11 52.5	0.3	1.3	0.09	15	17 7.1	4 49 29.51	20 55 12.7	0.3	1.3	0.09
30	7 46.5	4 28 26.59	+20 11 50.3	0.3	1.3	0.09	16	17 3.2	4 49 29.43	+20 55 9.8	0.3	1.3	0.09
31	7 42.6	4 28 24.19	20 11 48.3	0.3	1.3	0.09	17	16 59.2	4 49 29.21	20 55 6.6	0.3	1.3	0.09
Feb. 1	7 38.6	4 28 21.93	20 11 46.7	0.3	1.3	0.09	18	16 55.3	4 49 28.85	20 55 3.2	0.3	1.3	0.09
2	7 34.6	4 28 19.81	20 11 45.4	0.3	1.3	0.09	19	16 51.4	4 49 28.34	20 54 59.6	0.3	1.3	0.09
3	7 30.7	4 28 17.82	20 11 44.4	0.3	1.3	0.09	20	16 47.4	4 49 27.69	20 54 55.8	0.3	1.3	0.09
4	7 26.7	4 28 15.96	+20 11 43.8	0.3	1.3	0.09	21	16 43.5	4 49 26.90	+20 54 51.8	0.3	1.3	0.09
5	7 22.7	4 28 14.25	20 11 43.4	0.3	1.3	0.09	22	16 39.5	4 49 25.98	20 54 47.5	0.3	1.3	0.09
6	7 18.8	4 28 12.67	20 11 43.5	0.3	1.3	0.09	23	16 35.6	4 49 24.90	20 54 43.0	0.3	1.3	0.09
7	7 14.8	4 28 11.23	20 11 43.8	0.3	1.3	0.09	24	16 31.6	4 49 23.70	20 54 38.3	0.3	1.3	0.09
8	7 10.9	4 28 9.94	20 11 44.4	0.3	1.3	0.09	25	16 27.7	4 49 22.36	20 54 33.3	0.3	1.3	0.09
9	7 6.9	4 28 8.79	+20 11 45.4	0.3	1.3	0.09	26	16 23.7	4 49 20.89	+20 54 28.1	0.3	1.3	0.09
10	7 3.0	4 28 7.78	20 11 46.7	0.3	1.3	0.09	27	16 19.8	4 49 19.26	20 54 22.7	0.3	1.3	0.09
11	6 59.0	4 28 6.92	20 11 48.3	0.3	1.3	0.09	28	16 15.8	4 49 17.51	20 54 17.1	0.3	1.3	0.09
12	6 55.1	4 28 6.19	20 11 50.3	0.3	1.3	0.09	29	16 11.9	4 49 15.62	20 54 11.3	0.3	1.3	0.09
13	6 51.1	4 28 5.60	20 11 52.6	0.3	1.3	0.09	30	16 7.9	4 49 13.60	20 54 5.3	0.3	1.3	0.09
14	6 47.2	4 28 5.17	+20 11 55.2	0.3	1.3	0.09	Oct. 1	16 3.9	4 49 11.44	+20 53 59.0	0.3	1.3	0.09
15	6 43.3	4 28 4.89	+20 11 58.1	0.3	1.3	0.09	2	15 59.9	4 49 9.14	+20 53 52.5	0.3	1.3	0.09

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	16 3.9	4 49 11.44	+20 53 59.0	0.3	1.3	0.09	Nov. 16	12 59.4	4 45 29.19	+20 46 9.4	0.3	1.3	0.09
2	15 59.9	4 49 9.14	20 53 52.5	0.3	1.3	0.09	17	12 55.3	4 45 22.40	20 45 56.6	0.3	1.3	0.09
3	15 56.0	4 49 6.72	20 53 45.9	0.3	1.3	0.09	18	12 51.3	4 45 15.57	20 45 43.8	0.3	1.3	0.09
4	15 52.0	4 49 4.16	20 53 39.0	0.3	1.3	0.09	19	12 47.3	4 45 8.70	20 45 30.9	0.3	1.3	0.09
5	15 48.0	4 49 1.46	20 53 31.9	0.3	1.3	0.09	20	12 43.2	4 45 1.78	20 45 17.9	0.3	1.3	0.09
6	15 44.1	4 48 58.63	+20 53 24.6	0.3	1.3	0.09	21	12 39.2	4 44 54.82	+20 45 5.0	0.3	1.3	0.09
7	15 40.1	4 48 55.67	20 53 17.1	0.3	1.3	0.09	22	12 35.1	4 44 47.82	20 44 52.0	0.3	1.3	0.09
8	15 36.1	4 48 52.60	20 53 9.4	0.3	1.3	0.09	23	12 31.1	4 44 40.79	20 44 38.9	0.3	1.3	0.09
9	15 32.1	4 48 49.39	20 53 1.6	0.3	1.3	0.09	24	12 27.0	4 44 33.75	20 44 25.9	0.3	1.3	0.09
10	15 28.1	4 48 46.05	20 52 53.5	0.3	1.3	0.09	25	12 23.0	4 44 26.68	20 44 12.9	0.3	1.3	0.09
11	15 24.1	4 48 42.58	+20 52 45.2	0.3	1.3	0.09	26	12 18.9	4 44 19.59	+20 43 59.9	0.3	1.3	0.09
12	15 20.1	4 48 39.00	20 52 36.8	0.3	1.3	0.09	27	12 14.8	4 44 12.47	20 43 46.9	0.3	1.3	0.09
13	15 16.1	4 48 35.29	20 52 28.2	0.3	1.3	0.09	28	12 10.8	4 44 5.34	20 43 33.9	0.3	1.3	0.09
14	15 12.1	4 48 31.46	20 52 19.3	0.3	1.3	0.09	29	12 6.7	4 43 58.17	20 43 20.8	0.3	1.3	0.09
15	15 8.1	4 48 27.51	20 52 10.4	0.3	1.3	0.09	30	12 2.7	4 43 50.99	20 43 7.8	0.3	1.3	0.09
16	15 4.1	4 48 23.45	+20 52 1.2	0.3	1.3	0.09	Dec. 1	11 58.6	4 43 43.81	+20 42 54.8	0.3	1.3	0.09
17	15 0.1	4 48 19.27	20 51 51.9	0.3	1.3	0.09	2	11 54.6	4 43 36.63	20 42 41.9	0.3	1.3	0.09
18	14 56.1	4 48 14.98	20 51 42.4	0.3	1.3	0.09	3	11 50.5	4 43 29.45	20 42 29.0	0.3	1.3	0.09
19	14 52.1	4 48 10.57	20 51 32.7	0.3	1.3	0.09	4	11 46.5	4 43 22.27	20 42 16.1	0.3	1.3	0.09
20	14 48.1	4 48 6.04	20 51 22.9	0.3	1.3	0.09	5	11 42.4	4 43 15.09	20 42 3.3	0.3	1.3	0.09
21	14 44.1	4 48 1.41	+20 51 12.9	0.3	1.3	0.09	6	11 38.4	4 43 7.91	+20 41 50.5	0.3	1.3	0.09
22	14 40.1	4 47 56.67	20 51 2.8	0.3	1.3	0.09	7	11 34.3	4 43 0.73	20 41 37.8	0.3	1.3	0.09
23	14 36.1	4 47 51.84	20 50 52.5	0.3	1.3	0.09	8	11 30.3	4 42 53.56	20 41 25.1	0.3	1.3	0.09
24	14 32.1	4 47 46.90	20 50 42.1	0.3	1.3	0.09	9	11 26.2	4 42 46.41	20 41 12.6	0.3	1.3	0.09
25	14 28.1	4 47 41.86	20 50 31.5	0.3	1.3	0.09	10	11 22.2	4 42 39.29	20 41 0.1	0.3	1.3	0.09
26	14 24.1	4 47 36.71	+20 50 20.8	0.3	1.3	0.09	11	11 18.1	4 42 32.20	+20 40 47.7	0.3	1.3	0.09
27	14 20.0	4 47 31.47	20 50 9.9	0.3	1.3	0.09	12	11 14.1	4 42 25.12	20 40 35.4	0.3	1.3	0.09
28	14 16.0	4 47 26.12	20 49 58.9	0.3	1.3	0.09	13	11 10.0	4 42 18.07	20 40 23.1	0.3	1.3	0.09
29	14 12.0	4 47 20.67	20 49 47.7	0.3	1.3	0.09	14	11 6.0	4 42 11.05	20 40 11.0	0.3	1.3	0.09
30	14 8.0	4 47 15.14	20 49 36.4	0.3	1.3	0.09	15	11 1.9	4 42 4.04	20 39 59.0	0.3	1.3	0.09
31	14 4.0	4 47 9.53	+20 49 25.1	0.3	1.3	0.09	16	10 57.9	4 41 57.08	+20 39 47.0	0.3	1.3	0.09
Nov. 1	13 59.9	4 47 3.82	20 49 13.6	0.3	1.3	0.09	17	10 53.8	4 41 50.16	20 39 35.2	0.3	1.3	0.09
2	13 55.9	4 46 58.04	20 49 2.0	0.3	1.3	0.09	18	10 49.8	4 41 43.29	20 39 23.5	0.3	1.3	0.09
3	13 51.9	4 46 52.16	20 48 50.2	0.3	1.3	0.09	19	10 45.7	4 41 36.46	20 39 12.0	0.3	1.3	0.09
4	13 47.9	4 46 46.20	20 48 38.4	0.3	1.3	0.09	20	10 41.7	4 41 29.67	20 39 0.5	0.3	1.3	0.09
5	13 43.8	4 46 40.16	+20 48 26.4	0.3	1.3	0.09	21	10 37.7	4 41 22.94	+20 38 49.2	0.3	1.3	0.09
6	13 39.8	4 46 34.03	20 48 14.3	0.3	1.3	0.09	22	10 33.6	4 41 16.25	20 38 38.0	0.3	1.3	0.09
7	13 35.7	4 46 27.84	20 48 2.2	0.3	1.3	0.09	23	10 29.6	4 41 9.61	20 38 26.9	0.3	1.3	0.09
8	13 31.7	4 46 21.58	20 47 50.0	0.3	1.3	0.09	24	10 25.5	4 41 3.03	20 38 16.0	0.3	1.3	0.09
9	13 27.7	4 46 15.25	20 47 37.7	0.3	1.3	0.09	25	10 21.5	4 40 56.52	20 38 5.3	0.3	1.3	0.09
10	13 23.6	4 46 8.85	+20 47 25.3	0.3	1.3	0.09	26	10 17.5	4 40 50.08	+20 37 54.7	0.3	1.3	0.09
11	13 19.6	4 46 2.39	20 47 12.8	0.3	1.3	0.09	27	10 13.4	4 40 43.69	20 37 44.3	0.3	1.3	0.09
12	13 15.5	4 45 55.87	20 47 0.3	0.3	1.3	0.09	28	10 9.4	4 40 37.37	20 37 34.1	0.3	1.3	0.09
13	13 11.5	4 45 49.28	20 46 47.6	0.3	1.3	0.09	29	10 5.4	4 40 31.12	20 37 24.0	0.3	1.3	0.09
14	13 7.5	4 45 42.63	20 46 34.9	0.3	1.3	0.09	30	10 1.3	4 40 24.94	20 37 14.1	0.3	1.3	0.09
15	13 3.4	4 45 35.93	+20 46 22.2	0.3	1.3	0.09	31	9 57.3	4 40 18.82	+20 37 4.3	0.3	1.3	0.09
16	12 59.4	4 45 29.19	+20 46 9.4	0.3	1.3	0.09	32	9 53.3	4 40 12.78	+20 36 54.8	0.3	1.3	0.09

PART III

PHENOMENA

EPH 93—26—409

ECLIPSES IN 1893.

In the year 1893 there will be two eclipses, both of the sun.

I.—*A Total Eclipse of the Sun*, 1893, April 15—16, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☌ in right ascension, April $16^{d}\ 2^{h}\ 27^{m}\ 0^{s}.9$

Sun and moon's R. A.	$1^{h}\ 39^{m}\ 28^{s}.28$	Hourly motions	$9^{s}.27$ and $135^{s}.77$
Sun's declination	$10^{\circ}\ 20'\ 25''.8$ N.	Hourly motion	$0'\ 53''.0$ N.
Moon's declination	10 8 27.9 N.	Hourly motion	16 37.6 N.
Sun's equa. hor. parallax	8.5	Sun's true semidiameter	15 55.7
Moon's equa. hor. parallax	60 40.0	Moon's true semidiameter	16 31.1

CIRCUMSTANCES OF THE ECLIPSE.

		d h m	Longitude from Greenwich.	Latitude.
Eclipse begins	April	15 23 57.5	$82^{\circ}\ 41'.4$ W.	$32^{\circ}\ 57'.6$ S.
Central eclipse begins		16 0 54.0	95 50.1 W.	36 28.9 S.
Central eclipse at noon		16 2 27.0	36 50.3 W.	1 4.2 S.
Central eclipse ends		16 4 18.7	28 19.6 E.	16 28.2 N.
Eclipse ends		16 5 15.1	14 57.7 E.	20 2.0 N.

II.—*An Annular Eclipse of the Sun*, 1893, October 9, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☌ in right ascension, October $9^{d}\ 8^{h}\ 12^{m}\ 50^{s}.7$

Sun and moon's R. A.	$13^{h}\ 1^{m}\ 45^{s}.01$	Hourly motions	$9^{s}.20$ and $113^{s}.15$
Sun's declination	$6^{\circ}\ 35'\ 17''.8$ S.	Hourly motion	$0'\ 57''.0$ S.
Moon's declination	6 17 10.1 S.	Hourly motion	14 50.9 S.
Sun's equa. hor. parallax	8.6	Sun's true semidiameter	16 1.6
Moon's equa. hor. parallax	55 55.4	Moon's true semidiameter	15 15.6

CIRCUMSTANCES OF THE ECLIPSE.

		d h m	Longitude from Greenwich. ° '	Latitude. ° '
Eclipse begins	October	9 5 35.6	171 49.5 W.	38 44.3 N.
Central eclipse begins		9 6 41.3	173 0.7 E.	44 44.9 N.
Central eclipse at noon		9 8 12.8	126 26.3 W.	12 27.6 N.
Central eclipse ends		9 10 19.7	66 47.8 W.	11 37.5 S.
Eclipse ends		9 11 25.5	82 28.9 W.	17 40.5 S.

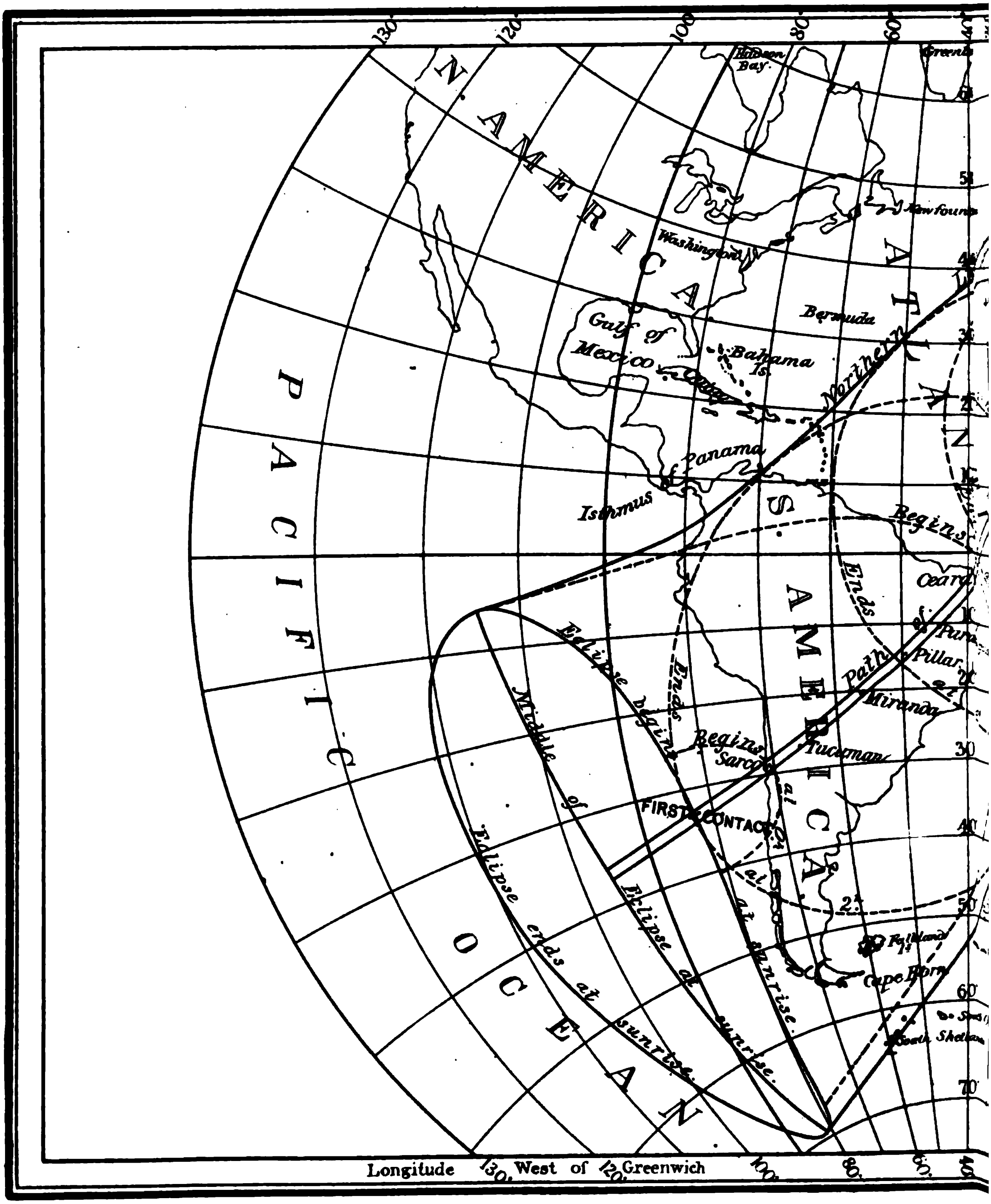
The regions within which the eclipses of the sun are visible, are laid down on the accompanying charts; from which, by means of the dotted lines, may also be found the Greenwich time of beginning and ending, within fifteen or twenty minutes.

BESSELIAN ELEMENTS OF THE TOTAL ECLIPSE OF THE SUN, 1893, APRIL 15—16.

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	x	y	Log sin d	Log cos d	μ	l	l'
h m					° ′		
23 50	−1.34571	−0.87885	+9.25255	+9.99294	357 34.5	+0.53619	−0.00964
0 0	−1.26003	−0.83546	+9.25264	+9.99294	0 4.6	+0.53619	−0.00964
10	1.17435	0.79207	9.25274	9.99293	2 34.6	0.53619	0.00964
20	1.08867	0.74868	9.25284	9.99293	5 4.7	0.53618	0.00965
30	1.00298	0.70529	9.25294	9.99293	7 34.7	0.53618	0.00965
40	0.91729	0.66191	9.25303	9.99292	10 4.7	0.53618	0.00965
50	0.83160	0.61853	9.25313	9.99292	12 34.8	0.53617	0.00966
1 0	−0.74590	−0.57515	+9.25323	+9.99292	15 4.8	+0.53617	−0.00966
10	0.66019	0.53177	9.25333	9.99291	17 34.8	0.53617	0.00966
20	0.57448	0.48839	9.25342	9.99291	20 4.9	0.53616	0.00967
30	0.48877	0.44501	9.25352	9.99291	22 34.9	0.53615	0.00968
40	0.40305	0.40163	9.25362	9.99290	25 4.9	0.53614	0.00968
50	0.31733	0.35825	9.25372	9.99290	27 35.0	0.53613	0.00969
2 0	−0.23161	−0.31487	+9.25381	+9.99290	30 5.0	+0.53612	−0.00970
10	0.14588	0.27150	9.25391	9.99289	32 35.1	0.53611	0.00971
20	−0.06015	0.22813	9.25401	9.99289	35 5.1	0.53610	0.00972
30	+0.02558	0.18476	9.25410	9.99289	37 35.1	0.53609	0.00973
40	0.11131	0.14139	9.25420	9.99288	40 5.2	0.53608	0.00974
50	0.19704	0.09803	9.25430	9.99288	42 35.2	0.53607	0.00975
3 0	+0.28277	−0.05467	+9.25440	+9.99288	45 5.2	+0.53605	−0.00977
10	0.36850	−0.01131	9.25449	9.99287	47 35.3	0.53604	0.00978
20	0.45424	+0.03204	9.25459	9.99287	50 5.3	0.53603	0.00980
30	0.53998	0.07539	9.25469	9.99287	52 35.4	0.53601	0.00981
40	0.62572	0.11874	9.25479	9.99286	55 5.4	0.53599	0.00983
50	0.71146	0.16209	9.25488	9.99286	57 35.4	0.53597	0.00985
4 0	+0.79720	+0.20543	+9.25498	+9.99286	60 5.5	+0.53596	−0.00987
10	0.88294	0.24876	9.25508	9.99285	62 35.5	0.53594	0.00989
20	0.96868	0.29209	9.25518	9.99285	65 5.5	0.53592	0.00991
30	1.05443	0.33542	9.25527	9.99285	67 35.6	0.53590	0.00993
40	1.14017	0.37874	9.25537	9.99284	70 5.6	0.53588	0.00995
50	1.22592	0.42206	9.25547	9.99284	72 35.7	0.53586	0.00997
5 0	+1.31167	+0.46538	+9.25557	+9.99284	75 5.7	+0.53584	−0.00999
10	1.39741	0.50869	9.25566	9.99283	77 35.7	0.53582	0.01001
20	+1.48315	+0.55199	+9.25576	+9.99283	80 5.8	+0.53580	−0.01003

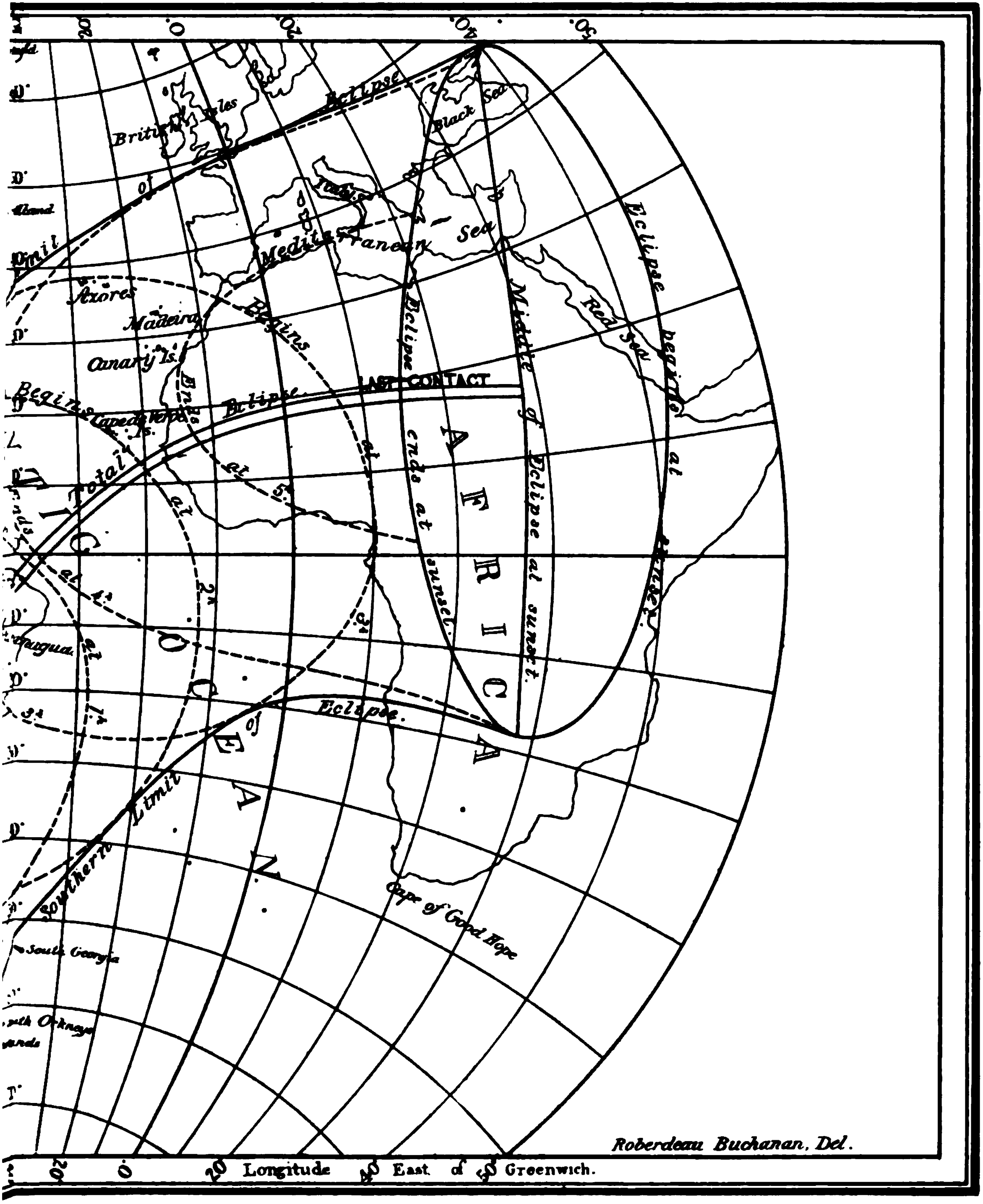
Greenwich Mean Time.	Log Δ x for 1 Minute.	Log Δ y for 1 Minute.	Log Δ μ for 1 Minute.	Log Tangents of Angles of Cones—	
				Penumbra.	Shadow.
h m					
0 0	+7.9328	+7.6373	+1.1762	+7.66798	+7.66587
1 0	7.9330	7.6373	1.1762	7.66798	7.66586
2 0	7.9331	7.6372	1.1762	7.66797	7.66586
3 0	7.9332	7.6371	1.1762	7.66796	7.66585
4 0	7.9332	7.6369	1.1762	7.66796	7.66585
5 0	7.9332	7.6366	1.1762	7.66795	7.66584
6 0	+7.9331	+7.6363	+1.1762	+7.66795	+7.66584

TOTAL ECLIPSE O



Note— *The hours of beginning and ending*

F APRIL 15-16TH 1893.



are expressed in Greenwich Mean Time.

PATH OF THE SHADOW DURING THE TOTAL ECLIPSE OF THE SUN, 1893, APRIL 15—16.

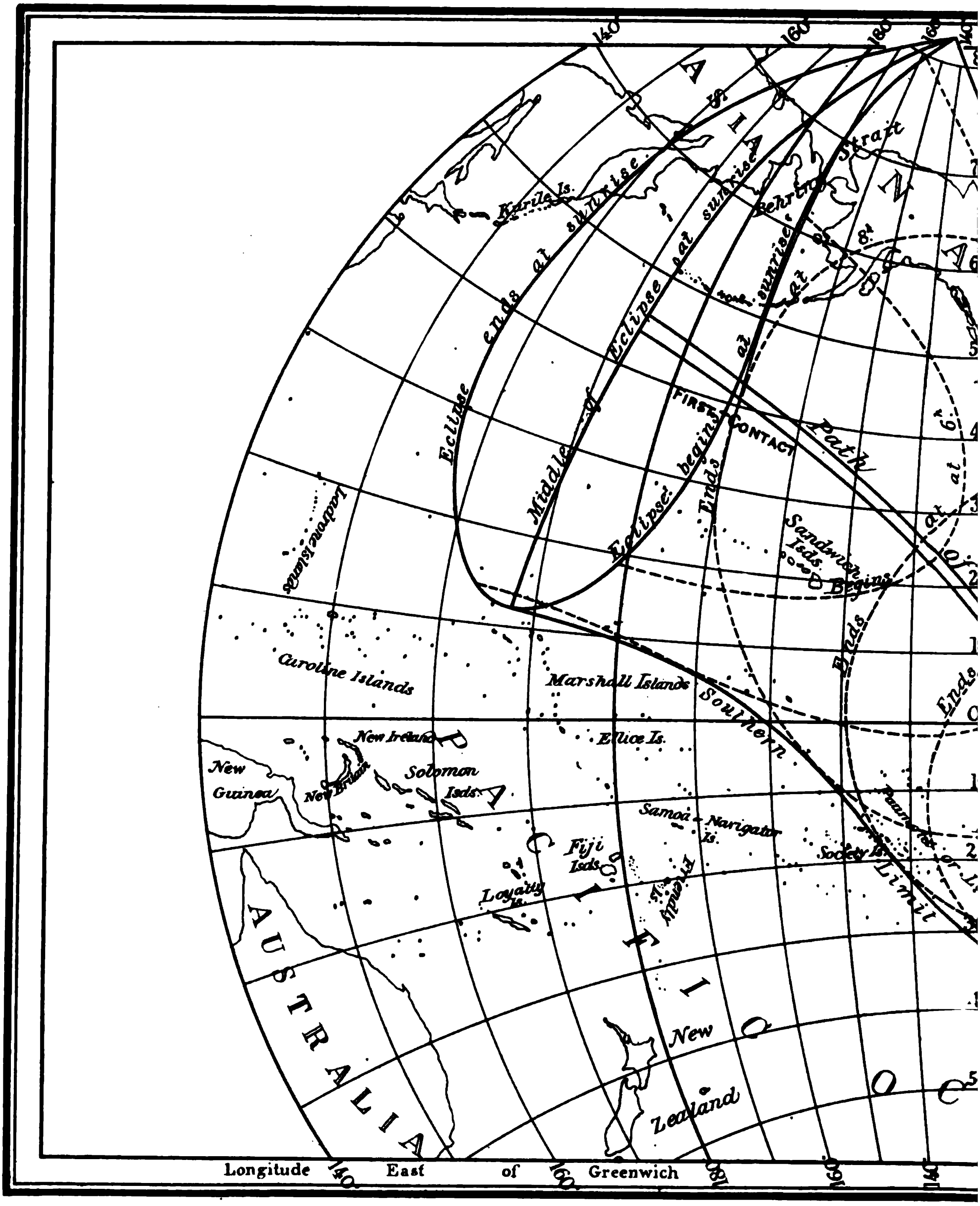
Greenwich Mean Time.	Northern Limit of Shadow Path.		Central Line.		Southern Limit of Shadow Path.		Duration of Totality on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
	° ′	° ′	° ′	° ′	° ′	° ′	m s
Limits	−36 8.8	95 37.9 W.	−36 28.9	95 50.1 W.	−36 48.9	95 57.7 W.	
0^{h} 55^{m}	33 47.2	86 31.1	34 25.5	86 36.8	35 3.8	86 42.5	2 15.5
1 0	−30 1.3	75 22.2	−30 37.0	75 5.8	−31 12.7	74 49.4	2 40.3
5	27 17.3	69 19.8	27 52.6	68 57.9	28 27.9	68 36.0	2 57.4
10	24 56.8	64 59.0	25 31.7	64 33.8	26 6.6	64 8.6	3 10.4
15	22 49.1	61 32.0	23 23.7	61 4.5	23 58.3	60 37.0	3 21.8
20	20 50.9	58 39.2	21 25.2	58 10.1	21 59.5	57 41.0	3 31.6
25	18 59.2	56 10.2	19 33.3	55 39.7	20 7.4	55 9.2	3 40.7
30	−17 12.7	53 58.7	−17 46.6	53 27.2	−18 20.5	52 55.7	3 49.2
35	15 30.6	52 0.8	16 4.4	51 28.5	16 38.2	50 56.2	3 56.8
40	13 52.5	50 13.2	14 26.2	49 40.3	14 59.9	49 7.4	4 3.8
45	12 17.5	48 33.9	12 51.2	48 0.5	13 24.9	47 27.1	4 10.2
50	10 45.5	47 1.6	11 19.1	46 27.7	11 52.7	45 53.8	4 16.1
55	9 16.0	45 34.6	9 49.6	45 0.3	10 23.2	44 26.0	4 21.4
2 0	− 7 48.7	44 11.9	− 8 22.4	43 37.3	− 8 56.1	43 2.7	4 26.2
5	6 23.4	42 52.6	6 57.3	42 17.7	7 31.2	41 42.8	4 30.5
10	5 0.0	41 35.9	5 34.1	41 0.8	6 8.2	40 25.7	4 34.2
15	3 38.3	40 20.9	4 12.6	39 45.8	4 46.9	39 10.7	4 37.5
20	2 18.4	39 7.5	2 52.9	38 32.3	3 27.4	37 57.1	4 40.2
25	− 1 0.2	37 54.8	1 35.0	37 19.6	2 9.8	36 44.4	4 42.4
30	+ 0 16.4	36 42.4	− 0 18.7	36 7.2	− 0 53.8	35 32.0	4 44.0
35	1 31.8	35 29.6	+ 0 56.3	34 54.6	+ 0 20.8	34 19.6	4 45.1
40	2 45.8	34 16.2	2 9.9	33 41.4	1 34.0	33 6.6	4 45.7
45	3 58.4	33 1.7	3 22.1	32 27.1	2 45.8	31 52.5	4 45.6
50	5 9.5	31 45.5	4 32.8	31 11.2	3 56.1	30 36.9	4 45.0
55	6 19.2	30 27.2	5 42.1	29 53.2	5 5.0	29 19.2	4 43.8
3 0	+ 7 27.6	29 6.1	+ 6 50.0	28 32.5	+ 6 12.4	27 58.9	4 42.0
5	8 34.6	27 41.8	7 56.5	27 8.7	7 18.4	26 35.6	4 39.6
10	9 40.2	26 13.4	9 1.6	25 40.9	8 23.0	25 8.4	4 36.6
15	10 44.2	24 40.4	10 5.1	24 8.6	9 26.0	23 36.8	4 32.8
20	11 46.4	23 1.9	11 6.8	22 30.9	10 27.2	21 59.9	4 28.4
25	12 46.8	21 17.3	12 6.8	20 47.1	11 26.8	20 16.9	4 23.3
30	+13 45.1	19 25.0	+13 4.7	18 55.7	+12 24.3	18 26.4	4 17.4
35	14 41.3	17 23.9	14 0.5	16 55.6	13 19.7	16 27.3	4 10.8
40	15 34.7	15 12.1	14 53.6	14 45.0	14 12.5	14 17.9	4 3.5
45	16 25.2	12 47.3	15 43.9	12 21.4	15 2.6	11 55.5	3 55.7
50	17 12.1	10 6.6	16 30.6	9 42.1	15 49.1	9 17.6	3 46.9
55	17 54.4	7 5.3	17 12.8	6 42.3	16 31.2	6 19.3	3 36.1
4 0	+18 30.7	3 36.6 W.	+17 49.2	3 15.2 W.	+17 7.7	2 53.8 W.	3 24.8
5	18 58.9	0 31.0 E.	18 17.7	0 50.8 E.	17 36.5	1 10.6 E.	3 11.9
10	19 13.9	5 41.8	18 33.2	6 0.3	17 52.5	6 18.8	2 56.9
15	19 2.8	13 3.9	18 22.9	13 23.1	17 43.0	13 42.3	2 37.4
Limits	+16 45.8	28 31.7 E.	+16 28.2	28 19.6 E.	+16 8.1	28 5.6 E.	

BESSELIAN ELEMENTS OF THE ANNULAR ECLIPSE OF THE SUN, 1893, OCTOBER 9.

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	x	y	Log sin d	Log cos d	μ	l	l′
h m					° ′		
5 30	−1.25672	+1.00108	−9.05703	+9.99716	85 43.0	+0.55990	+0.01396
40	1.17956	0.95956	9.05720	9.99716	88 13.0	0.55993	0.01399
50	1.10240	0.91804	9.05737	9.99715	90 43.1	0.55996	0.01402
6 0	−1.02524	+0.87652	−9.05753	+9.99715	93 13.1	+0.55999	+0.01405
10	0.94807	0.83496	9.05769	9.99715	95 43.1	0.56002	0.01407
20	0.87090	0.79345	9.05786	9.99715	98 13.2	0.56004	0.01410
30	0.79373	0.75194	9.05803	9.99714	100 43.2	0.56007	0.01412
40	0.71656	0.71043	9.05819	9.99714	103 13.3	0.56010	0.01415
50	0.63939	0.66892	9.05836	9.99714	105 43.3	0.56013	0.01417
7 0	−0.56222	+0.62741	−9.05853	+9.99714	108 13.3	+0.56015	+0.01420
10	0.48505	0.58589	9.05870	9.99714	110 43.4	0.56017	0.01423
20	0.40787	0.54438	9.05887	9.99713	113 13.4	0.56020	0.01425
30	0.33069	0.50286	9.05903	9.99713	115 43.4	0.56022	0.01428
40	0.25351	0.46135	9.05920	9.99713	118 13.5	0.56024	0.01430
50	0.17633	0.41984	9.05937	9.99713	120 43.5	0.56026	0.01432
8 0	−0.09915	+0.37833	−9.05953	+9.99712	123 13.5	+0.56028	+0.01434
10	−0.02197	0.33682	9.05970	9.99712	125 43.6	0.56030	0.01436
20	+0.05522	0.29531	9.05987	9.99712	128 13.6	0.56032	0.01438
30	0.13241	0.25381	9.06003	9.99712	130 43.7	0.56034	0.01440
40	0.20960	0.21231	9.06020	9.99712	133 13.7	0.56036	0.01442
50	0.28679	0.17081	9.06037	9.99711	135 43.7	0.56038	0.01444
9 0	+0.36398	+0.12931	−9.06053	+9.99711	138 13.8	+0.56039	+0.01445
10	0.44117	0.08781	9.06070	9.99711	140 43.8	0.56041	0.01447
20	0.51836	0.04631	9.06086	9.99711	143 13.9	0.56042	0.01448
30	0.59555	+0.00482	9.06103	9.99710	145 43.9	0.56044	0.01450
40	0.67273	−0.03667	9.06120	9.99710	148 14.0	0.56045	0.01451
50	0.74992	0.07816	9.06136	9.99710	150 44.0	0.56047	0.01453
10 0	+0.82710	−0.11965	−9.06152	+9.99710	153 14.0	+0.56048	+0.01454
10	0.90428	0.16113	9.06169	9.99710	155 44.1	0.56049	0.01456
20	0.98146	0.20261	9.06186	9.99709	158 14.1	0.56051	0.01457
30	1.05863	0.24409	9.06202	9.99709	160 44.1	0.56052	0.01459
40	1.13582	0.28557	9.06219	9.99709	163 14.2	0.56053	0.01460
50	1.21297	0.32705	9.06236	9.99709	165 44.2	0.56054	0.01461
11 0	+1.29013	−0.36852	−9.06252	+9.99709	168 14.3	+0.56055	+0.01461
10	1.36729	0.40999	9.06269	9.99708	170 44.3	0.56056	0.01462
20	1.44444	0.45146	9.06285	9.99708	173 14.3	0.56057	0.01463
30	+1.52157	−0.49292	−9.06302	+9.99708	175 44.4	+0.56058	+0.01464

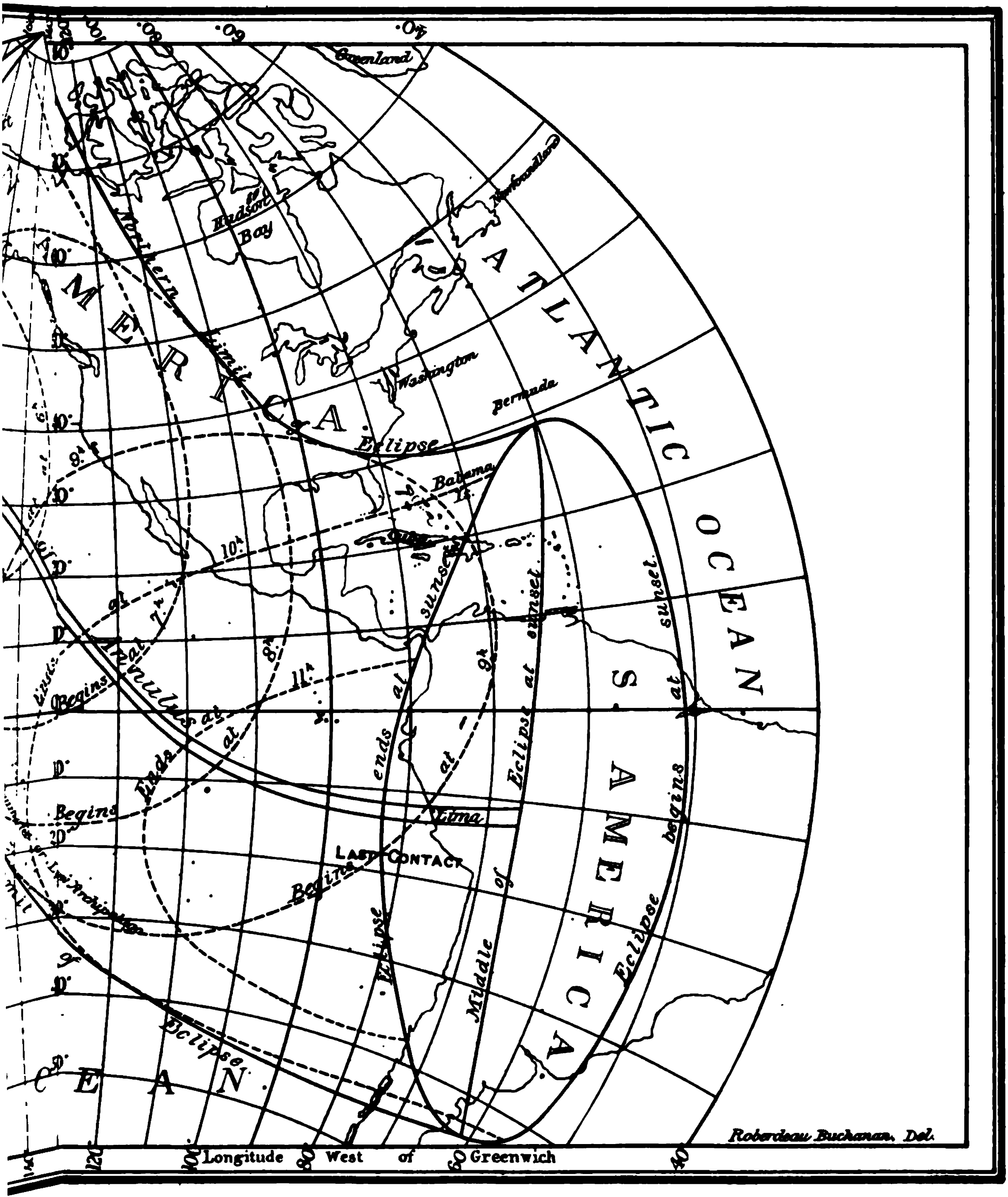
Greenwich Mean Time.	Log Δ x for 1 Minute.	Log Δ y for 1 Minute.	Log Δ μ for 1 Minute.	Log Tangents of Angles of Cones—	
				Penumbra.	Shadow.
5 0	+7.8873	−7.6182	+1.1762	+7.67073	+7.66802
6 0	7.8874	7.6183	1.1762	7.67073	7.66802
7 0	7.8875	7.6182	1.1762	7.67074	7.66803
8 0	7.8875	7.6181	1.1762	7.67074	7.66803
9 0	7.8875	7.6180	1.1762	7.67075	7.66804
10 0	7.8875	7.6179	1.1762	7.67076	7.66804
11 0	7.8874	7.6177	1.1762	7.67076	7.66805
12 0	+7.8873	−7.6176	+1.1762	+7.67077	+7.66806

ANNULAR ECLIPSE



Note – *The hours of beginning and end*

SE OF OCTOBER 9TH 1893.



Roberdeau Buchanan, Del.

nd ending are expressed in Greenwich Mean Time.

PATH OF THE ANNULUS DURING THE ANNULAR ECLIPSE OF THE SUN, 1893, OCTOBER 9.

Greenwich Mean Time.	Northern Limit of Annulus Path.		Central Line.		Southern Limit of Annulus Path.		Duration of Annulus on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
	° ′	° ′	° ′	° ′	° ′	° ′	m s
Limits	+45 33.5	173 8.8 E.	+44 44.9	173 0.7 E.	+43 53.2	172 58.9 E.	
6h 45m	42 13.1	168 59.1 W.	41 20.2	168 52.1 W.	40 27.3	168 45.1 W.	3 21.6
50	39 25.8	160 29.3	38 40.6	160 36.1	37 55.4	160 42.9	3 24.4
55	37 7.3	154 57.5	36 26.5	155 12.9	35 45.7	155 28.3	3 26.5
7 0	+35 1.9	150 47.2	+34 24.3	151 7.0	+33 46.7	151 26.8	3 28.0
5	33 5.9	147 26.7	32 30.8	147 49.0	31 55.7	148 11.3	3 29.5
10	31 16.2	144 38.2	30 43.2	145 2.2	30 10.2	145 26.2	3 30.7
15	29 31.9	142 13.8	29 0.6	142 38.9	28 29.3	143 4.0	3 31.9
20	27 51.9	140 6.9	27 22.1	140 32.6	26 52.3	140 58.3	3 32.9
25	26 15.6	138 14.1	25 47.0	138 40.2	25 18.4	139 6.3	3 33.9
30	+24 42.3	136 32.2	+24 14.8	136 58.6	+23 47.3	137 25.0	3 34.8
35	23 11.8	134 50.3	22 45.2	135 25.9	22 18.6	135 52.5	3 35.6
40	21 43.7	133 33.7	21 17.9	134 0.4	20 52.1	134 27.1	3 36.4
45	20 17.7	132 14.1	19 52.5	132 40.9	19 27.3	133 7.7	3 37.1
50	18 53.7	130 59.3	18 29.1	131 26.2	18 4.5	131 53.1	3 37.8
55	17 31.5	129 48.7	17 7.3	130 15.6	16 43.1	130 42.5	3 38.5
8 0	+16 11.0	128 41.4	+15 47.2	129 8.3	+15 23.4	129 35.2	3 39.2
5	14 51.9	127 36.8	14 28.4	128 3.7	14 4.9	128 30.6	3 39.9
10	13 34.3	126 34.3	13 11.1	127 1.2	12 47.8	127 28.1	3 40.5
15	12 18.1	125 33.2	11 55.0	126 0.2	11 31.9	126 27.2	3 41.1
20	11 3.2	124 33.4	10 40.1	125 0.4	10 17.0	125 27.4	3 41.7
25	9 49.4	123 34.3	9 26.3	124 1.3	9 3.2	124 28.3	3 42.3
30	+ 8 36.7	122 35.3	+ 8 13.5	123 2.4	+ 7 50.3	123 29.5	3 42.9
35	7 25.2	121 36.4	7 1.8	122 3.5	6 38.4	122 30.6	3 43.5
40	6 14.7	120 36.8	5 51.1	121 4.0	5 27.5	121 31.2	3 44.0
45	5 5.1	119 36.3	4 41.3	120 3.6	4 17.5	120 30.9	3 44.4
50	3 56.7	118 34.4	3 32.5	119 1.8	3 8.3	119 29.2	3 44.8
55	2 49.2	117 30.7	2 24.6	117 58.2	2 0.0	118 25.7	3 45.1
9 0	+ 1 42.7	116 24.8	+ 1 17.6	116 52.5	+ 0 52.5	117 20.2	3 45.3
5	+ 0 37.1	115 16.5	+ 0 11.5	115 44.4	− 0 14.1	116 12.3	3 45.5
10	− 0 27.4	114 5.0	− 0 53.6	114 33.1	1 19.8	115 1.2	3 45.7
15	1 30.8	112 49.5	1 57.7	113 17.8	2 24.6	113 46.1	3 45.7
20	2 33.1	111 29.2	3 0.8	111 57.8	3 28.5	112 26.4	3 45.6
25	3 34.4	110 3.7	4 2.9	110 32.6	4 31.4	111 1.5	3 45.4
30	− 4 34.3	108 31.7	− 5 3.8	109 0.9	− 5 33.2	109 30.1	3 45.1
35	5 32.8	106 52.3	6 3.3	107 21.9	6 33.8	107 51.5	3 44.6
40	6 29.9	105 3.7	7 1.5	105 33.7	7 33.1	106 3.7	3 43.6
45	7 25.2	103 3.9	7 58.0	103 34.4	8 30.8	104 4.9	3 42.8
50	8 18.4	100 50.6	8 52.6	101 21.7	9 26.8	101 52.8	3 41.7
55	9 9.1	98 19.5	9 44.8	98 51.4	10 20.5	99 23.3	3 40.4
10 0	− 9 56.2	95 24.3	−10 33.7	95 57.4	−11 11.2	96 30.5	3 38.7
5	10 38.9	91 55.7	11 18.5	92 30.8	11 58.1	93 5.9	3 36.6
10	11 14.4	87 32.1	11 56.6	88 11.5	12 38.8	88 50.9	3 33.8
15	11 35.7	81 21.8	12 22.0	82 9.9	13 8.3	82 58.0	3 30.3
Limits	−10 45.2	66 48.2 W.	−11 37.5	66 47.8 W.	−12 29.5	66 43.8 W.	

WASHINGTON MEAN TIME.

PHASES OF THE MOON.

New Moon.				First Quarter.				Full Moon.				Last Quarter.			
	d	h	m		d	h	m		d	h	m		d	h	m
								January	1	20	32.7	January	9	5	20.2
January	17	8	19.9	January	24	13	18.6	January	31	9	2.7	February	8	3	3.5
February	15	23	8.4	February	22	21	5.6	March	1	22	54.7	March	10	0	5.3
March	17	11	25.3	March	24	4	25.2	March	31	14	9.5	April	8	18	27.1
April	15	21	26.3	April	22	12	17.8	April	30	6	14.9	May	8	9	16.0
May	15	5	38.4	May	21	21	43.5	May	29	22	14.3	June	6	20	34.7
June	13	12	42.9	June	20	9	29.1	June	28	13	17.1	July	6	4	57.3
July	12	19	39.1	July	19	23	54.3	July	28	3	1.6	August	4	11	15.1
August	11	3	39.5	August	18	16	43.6	August	26	15	34.6	September	2	16	33.3
September	9	13	56.5	September	17	11	10.6	September	25	3	15.0	October	1	22	10.7
October	9	3	18.9	October	17	6	11.6	October	24	14	19.7	October	31	5	33.8
November	7	19	48.7	November	16	0	36.4	November	23	1	0.1	November	29	15	59.8
December	7	14	31.8	December	15	17	13.2	December	22	11	28.4	December	29	6	9.5

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Apogee.			Perigee.			Greatest Libration.									
	d	h		d	h		d	h	m			d	h	m	
January	11	13.9	January	27	8.5	January	5	2	41	W.	January	18	18	27	E.
February	8	10.7	February	21	3.6	February	2	14	33	W.	February	14	11	8	E.
March	8	7.0	March	20	2.0	March	1	2	40	W.	March	14	1	57	E.
April	5	1.4	April	17	4.8	March	27	6	17	W.	April	11	3	4	E.
May	2	12.9	May	15	13.6	April	23	11	36	W.	May	9	8	11	E.
May	29	14.6	June	12	23.2	May	21	11	45	W.	June	6	12	2	E.
June	25	20.6	July	11	6.4	June	18	16	39	W.	July	4	8	8	E.
July	23	9.1	August	8	4.6	July	16	18	18	W.	July	31	7	45	E.
August	20	1.9	September	3	16.5	August	13	18	53	W.	August	26	14	38	E.
September	16	21.2	September	28	22.7	September	10	6	0	W.	September	22	17	32	E.
October	14	16.9	October	26	13.5	October	7	2	9	W.	October	20	13	26	E.
November	11	10.3	November	23	20.9	November	2	6	7	W.	November	17	18	21	E.
December	8	18.3	December	22	10.2	November	29	22	24	W.	December	16	2	23	E.
						December	28	3	52	W.					

FORMULÆ FOR THE LIBRATION OF THE MOON.

Put I, the inclination of the moon's equator to the ecliptic ($= 1° 28'.8$),

Ω, the mean longitude of the moon's ascending node, (see page 278), or the mean longitude of the descending node of the moon's equator,

C, the angle at the centre of the moon's disk made by a lunar meridian with the circle of declination, counted from north to east on the apparent disk,

$\lambda, \beta, \alpha', \delta'$, the apparent longitude, latitude, right ascension, and declination of the moon, corrected for parallax,

λ', the selenocentric longitude of the earth, counted on the moon's equator from its descending node, Ω,

$i, \Delta, \Omega', ☾$, the quantities defined on page 276, where their values for the year are given.

The moon's libration in longitude and latitude may then be found, for any time, by means of the following formulæ, in connection with the tables given on pages 276 and 277:—

$$\left.\begin{aligned} \Delta\lambda &= -0'.57 \sin 2(\Omega - \lambda) \\ a &= \sin I \cos(\Omega - \lambda) \\ \tan B &= \tan I \sin(\Omega - \lambda) \\ \lambda' &= \lambda + \Delta\lambda + a\,b \end{aligned}\right\} \textit{See table, page 277.}$$

$$\text{The libration in latitude} = b = B - \beta$$

$$\text{The libration in longitude} = l = \lambda' - ☾$$

$$\sin C = \sin i \frac{\cos(\lambda' + \Delta - \Omega)}{\cos \delta'} = -\sin i \frac{\cos(\alpha' - \Omega')}{\cos b}$$

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	y	x′	y′	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
49 Aurigæ	5.7	+0.92	+6.6	+28 6.4	1 10 29.8	− 1 10.7	−0.4042	0.6101	−0.0038	+20	−37
54 Aurigæ	6.0	0.92	6.3	28 21.5	12 4.2	+ 0 19.7	−0.6656	0.6098	0.0092	+ 5	−56
25 Geminorum	6.5	0.93	6.3	28 17.8	12 43.3	+ 0 57.1	−0.6108	0.6094	0.0115	+ 8	−52
W. vi, 1656	8.2	0.95	5.5	26 59.7	20 56.5	+ 8 49.0	+0.4807	0.6070	0.0392	+76	+ 7
47 Geminorum	6.0	0.95	5.2	27 2.0	23 43.2	+11 28.6	+0.3207	0.6054	0.0484	+64	− 2
53 Geminorum	6.3	+0.97	+5.1	+28 5.1	2 1 23.1	−10 55.8	−0.8175	0.6047	−0.0548	− 4	−62
59 Geminorum	6.9	0.97	4.8	27 50.8	4 34.5	− 7 52.4	−0.7683	0.6030	0.0645	− 1	−62
ι Geminorum	4.0	0.98	4.8	28 0.7	5 0.8	− 7 27.3	−0.9625	0.6029	0.0656	−15	−62
b^3 Geminorum	6.3	0.99	4.6	28 8.3	6 31.7	− 6 0.2	−1.1940	0.6017	0.0704	−37	−62
B. A. C. 2472	8.0	0.99	4.6	28 8.0	6 50.6	− 5 32.1	−1.2020	0.6015	0.0716	−39	−62
υ Geminorum	4.3	+0.97	+4.4	+27 8.1	8 49.8	− 3 48.8	−0.3572	0.6002	−0.0778	+23	−40
c Geminorum	6.0	0.96	4.0	26 2.4	11 55.9	− 0 49.5	+0.4903	0.5981	0.0873	+77	+ 4
φ Geminorum	5.0	0.96	3.7	27 3.6	15 28.5	+ 2 34.4	−0.8492	0.5954	0.0981	− 6	−68
ω^1 Cancri	6.0	0.96	3.5	25 41.2	18 20.6	+ 5 19.3	+0.2274	0.5933	0.1064	+57	−12
ω^2 Cancri	6.3	0.95	3.6	25 23.1	18 39.3	+ 5 37.2	+0.4968	0.5933	0.1073	+77	+ 2
ψ^1 Cancri	6.8	+0.95	+3.2	+26 9.6	21 55.1	+ 8 45.2	−0.6510	0.5898	−0.1166	+ 7	−61
ψ^2 Cancri	5.7	0.95	3.2	25 50.0	22 1.1	+ 8 50.9	−0.3323	0.5898	0.1169	+25	−42
λ Cancri	5.7	0.93	2.9	24 21.5	3 1 58.8	−11 20.9	+0.6779	0.5864	0.1278	+90	+10
υ^1 Cancri *mult.*	6.0	0.93	2.6	24 53.1	4 23.3	− 9 2.1	−0.1727	0.5835	0.1348	+34	−35
υ^2 Cancri	5.8	0.93	2.6	24 30.0	5 10.0	− 8 17.3	+0.1134	0.5834	0.1362	+50	−20
υ^3 Cancri	6.0	+0.93	+2.5	+24 26.5	6 19.4	− 7 10.6	+0.0136	0.5822	−0.1395	+44	−26
υ^4 Cancri	5.7	0.92	2.5	24 26.9	6 55.1	− 6 36.3	−0.0780	0.5816	0.1407	+39	−31
ξ Cancri	5.0	0.83	1.2	22 28.7	21 50.8	+ 7 45.4	−0.4358	0.5659	0.1775	+20	−54
79 Cancri	6.3	0.83	1.2	22 25.8	22 15.8	+ 8 9.4	−0.4599	0.5659	0.1760	+18	−55
B. A. C. 3138	6.3	0.81	1.1	21 43.4	23 39.5	+ 9 30.1	+0.0137	0.5640	0.1793	+44	−31
B. A. C. 3206	6.3	+0.76	+0.9	+20 15.0	4 4 26.6	− 9 53.3	+0.6521	0.5593	−0.1888	+90	+ 2
η Leonis	3.3	0.61	−0.2	17 17.1	23 29.9	+ 8 30.4	−0.1806	0.5393	0.2197	+34	−46
42 Leonis	6.0	0.54	0.4	15 30.9	5 6 18.7	− 8 54.3	+0.1413	0.5328	0.2281	+52	−32
B. A. C. 3579	7.2	0.51	0.5	14 53.4	9 38.7	− 5 40.8	+0.0297	0.5294	0 2319	+45	−36
ι Leonis	5.7	+0.49	0.6	14 41.2	11 16.4	− 4 6.2	−0.1364	0.5279	0.2335	+36	−45
B. A. C. 4039	7.5	0.00	−0.6	+ 4 4.7	7 7 28.4	− 9 13.1	+0.1275	0.4975	−0.2586	+51	−36
b Virginis	5.8	0.00	0.7	4 15.1	8 24.2	− 8 19.0	−0.3000	0.4972	0.2587	+28	−60
10 Virginis	6.4	−0.07	0.5	+ 2 29.9	13 41.4	− 3 10.6	+0.2252	0.4949	0.2590	+56	−32
γ Virginis (*mean.*)	3.1	0.26	0.5	− 0 51.8	8 7 20.2	−10 0.9	−0.6937	0.4903	0.2575	+ 8	−90
38 Virginis	6.2	0.35	0.2	2 58.3	13 43.1	− 3 48.5	−0.0346	0.4899	0.2563	+41	−45
Saturn				− 2 45.9	15 14.9	− 2 19.1	−0.6518	0.4889	−0.2555	+10	−86
k Virginis	5.9	−0.38	−0.4	3 14.1	17 18.6	− 0 18.8	−0.6645	0.4896	0.2550	+ 9	−87
46 Virginis	6.1	0.38	0.5	2 47.6	17 50.1	+ 0 11.8	−1.2810	0.4896	0.2549	−32	−90
θ Virginis	4.7	0.45	0.2	4 58.1	23 2.3	+ 5 15.6	−0.2195	0.4889	0.2528	+32	−56
77 Virginis	7.0	0.60	0.2	7 4.4	9 12 5.1	− 6 2.9	−1.1620	0.4900	0.2456	−11	−90
m Virginis	5.7	−0.64	−0.1	− 8 9.8	16 37.4	− 1 38.0	−1.0710	0.4908	−0.2424	−17	−90
B. A. C. 4591	6.0	0.69	0.0	9 10.3	19 42.5	+ 1 22.0	−0.7074	0.4914	0.2405	+ 5	−90
λ Virginis	5.0	0.88	0.0	12 52.7	10 13 5.7	− 5 43.7	−0.6784	0.4966	0.2262	+ 4	−90
Uranus				14 28.3	23 4.0	+ 3 57.7	−1.1220	0.4994	0.2158	−25	−90
α^1 Libræ	6.3	1.07	−0.5	15 33.1	11 5 53.1	+10 35.0	−1.3720	0.5040	0.2081	−58	−68
α^2 Libræ	3.0	−1.07	−0.5	−15 35.8	5 59.2	+10 40.9	−1.3440	0.5041	−0.2079	−51	−77
B. A. C. 4896	6.6	1.09	+0.1	17 20.7	6 19.3	+11 0.4	+0.5225	0.5042	0.2077	+65	−16
10 Libræ	6.5	1.10	0.2	17 54.9	6 27.3	+11 8.2	+1.1280	0.5042	0.2073	+72	+22
ι^1 Libræ	5.0	1.22	+0.1	19 23.2	16 59.3	− 2 38.3	+0.6445	0.5102	0.1936	+69	− 9
ι^2 Libræ	6.5	1.22	−0.3	19 14.6	17 33.3	− 2 5.3	+0.3767	0.5107	0.1930	+54	−23
δ Scorpii	2.3	−1.45	−1.6	−22 19.0	12 16 55.6	− 3 26.0	−0.3133	0.5250	−0.1553	+14	−62
19 Scorpii	5.1	1.54	2.2	23 54.7	13 2 37.5	+ 5 57.3	+0.0239	0.5316	0.1375	+29	−42
25 Scorpii	7.0	1.64	3.2	25 20.0	14 50.9	− 6 16.4	+0.0588	0.5394	0.1127	+27	−43
18 Ophiuchi	6.7	1.65	3.4	24 27.2	16 11.7	− 4 55.2	−1.0610	0.5399	0.1097	−35	−90
B. A. C. 5709	6.3	1.68	3.8	24 55.8	20 51.5	− 0 24.9	−1.0230	0.5431	0.1000	−33	−90
26 Ophiuchi	6.1	−1.68	−3.8	−24 49.6	20 56.8	− 0 19.8	−1.1470	0.5431	−0.0994	−43	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
31 Ophiuchi	6.7	-1.70	- 3.9	-25 29.6	13 23 0.6	+ 1 39.9	-0.6120	0.5444	-0.0949	- 9	-88
B. A. C. 5800	7.5	1.74	4.1	26 51.5	14 3 16.2	+ 5 46.7	+0.5053	0.5466	0.0849	+50	-11
A Ophiuchi	4.9	1.74	4.3	26 26.8	3 48.5	+ 6 17.8	+0.0073	0.5470	0.0835	+22	-43
B. A. C. 5813	6.8	1.74	4.3	26 23.6	4 12.1	+ 6 40.7	-0.0824	0.5474	0.0827	+18	-49
38 Ophiuchi	6.7	1.74	4.3	26 30.8	4 48.7	+ 7 16.0	-0.0018	0.5476	0.0811	+22	-44
3 Sagittarii *var.*	4.6	-1.82	- 5.7	-27 47.5	18 1.7	- 3 58.6	+0.5378	0.5540	-0.0492	+49	-13
B. A. C. 6127	5.1	1.86	6.4	28 28.2	15 2 57.2	+ 4 37.9	+0.9397	0.5577	0.0262	+62	+13
B. A. C. 6194	5.1	1.87	7.0	27 4.9	7 17.7	+ 8 49.0	-0.6609	0.5590	-0.0147	-19	-90
φ Sagittarii	3.7	1.84	8.4	27 6.1	19 9.0	- 3 45.4	-0.6255	0.5616	+0.0168	-17	-90
				NEW	*MOON.*						
33 Capricorni	5.7	-1.55	-12.9	-21 18.6	18 16 13.4	- 9 8.7	+0.4706	0.5466	+0.1850	+57	-18
35 Capricorni	6.2	1.54	13.0	21 39.7	17 37.3	- 7 47.7	+1.1030	0.5459	0.1877	+68	+22
37 Capricorni	6.0	1.51	12.8	20 33.9	21 6.3	- 4 25.7	+0.6084	0.5439	0.1943	+66	-11
38 Capricorni	6.9	1.51	12.9	20 43.8	21 7.8	- 4 24.3	+0.7861	0.5439	0.1943	+69	- 0
ε Capricorni	4.7	-1.50	-12.8	-19 56.9	22 7.7	- 3 26.4	+0.1582	0.5437	+0.1962	+41	-35
κ Capricorni	5.0	1.48	12.8	19 21.4	19 0 41.3	- 0 58.0	+0.0422	0.5423	0.2007	+36	-41
B. A. C. 7550	6.3	1.48	12.8	20 6.7	0 56.7	- 0 43.1	+0.8888	0.5423	0.2013	+70	+ 6
50 Aquarii	6.1	1.34	12.0	14 4.5	20 16.5	- 6 1.6	-1.2510	0.5333	0.2316	-36	-90
56 Aquarii	6.3	1.32	12.2	15 8.2	23 2.6	- 3 19.0	+0.5054	0.5323	0.2352	+66	-17
74 Aquarii	6.0	-1.22	-11.2	-12 11.3	20 10 11.8	+ 7 26.9	+0.1285	0.5279	+0.2485	+47	-37
75 Aquarii	7.0	1.21	11.3	12 45.7	10 30.0	+ 7 44.4	+0.7989	0.5277	0.2484	+67	- 1
ψ^1 Aquarii	4.1	1.14	10.3	9 40.4	21 5.3	- 6 0.3	+0.2769	0.5247	0.2589	+56	-29
χ Aquarii	5.3	1.14	9.9	8 18.8	21 35.1	- 5 31.5	-1.0070	0.5246	0.2592	-13	-90
ψ^3 Aquarii	4.2	1.13	10.3	9 46.2	22 5.6	- 5 1.9	+0.6383	0.5243	0.2596	+79	-11
24 Piscium	6.1	-1.01	- 7.9	- 3 45.1	21 15 20.0	+11 40.3	-1.0120	0.5214	+0.2705	-11	-90
27 Piscium	5.1	0.98	7.8	4 9.1	18 10.6	- 9 34.5	+0.1720	0.5213	0.2717	+52	-35
29 Piscium	5.0	0.97	7.6	3 37.5	19 43.8	- 8 4.1	+0.0516	0.5212	0.2723	+41	-46
B. A. C. 8351	8.0	0.97	7.5	3 21.8	19 50.3	- 7 57.9	-0.1891	0.5212	0.2723	+33	-54
4 Ceti	6.0	0.95	7.3	3 8.8	22 39.0	- 5 14.4	+0.3538	0.5211	0.2730	+63	-26
5 Ceti	6.0	-0.95	- 7.3	- 3 2.7	22 52.9	- 5 0.9	+0.3125	0.5211	+0.2732	+61	-28
B. A. C. 5	5.7	0.95	7.2	2 49.2	23 8.1	- 4 46.2	+0.1494	0.5211	0.2732	+52	-36
10 Ceti	6.2	0.87	6.1	- 0 38.6	22 7 58.1	+ 3 47.4	+0.3324	0.5213	0.2749	+62	-26
B. A. C. 237	6.7	0.80	4.0	+ 2 48.3	20 4.6	- 8 28.8	+0.1195	0.5232	0.2743	+50	-37
73 Piscium	5.9	0.74	2.8	5 5.0	23 2 40.3	- 2 5.5	-0.4093	0.5250	0.2727	+23	-66
77 Piscium	5.9	-0.73	- 3.1	+ 4 20.3	3 8.0	- 1 38.8	+0.4790	0.5252	+0.2724	+72	-19
e Piscium	5.5	0.73	2.7	5 5.0	4 22.8	- 0 26.4	+0.0579	0.5258	0.2719	+47	-40
88 Piscium	6.2	0.71	2.1	6 25.7	7 25.0	+ 2 29.9	-0.4938	0.5266	0.2707	+18	-72
JUPITER				6 5.8	7 34.8	+ 2 39.6	-0.1108	0.5214	0.2683	+38	-48
B. A. C. 410	6.0	0.67	1.7	6 51.1	11 22.0	+ 6 19.5	+0.1412	0.5281	0.2687	+51	-35
96 Piscium	6.6	-0.63	- 1.5	+ 6 44.5	14 17.6	+ 9 9.5	+1.0370	0.5295	+0.2673	+90	+14
σ Piscium	4.3	0.56	- 0.2	8 37.1	22 0.6	- 7 22.5	+1.1660	0.5332	0.2619	+90	+24
54 Ceti	5.5	0.55	+ 0.6	10 30.8	24 0 34.0	- 4 54.2	-0.0967	0.5346	0.2599	+38	-46
B. A. C. 609	6.0	0.51	1.4	11 46.5	4 32.3	- 1 3.7	-0.3559	0.5365	0.2563	+25	-60
29 Arietis	6.3	0.34	3.2	14 33.6	19 44.9	-10 21.9	+0.5880	0.5464	0.2388	+82	- 9
36 Arietis	6.5	-0.29	+ 4.7	+17 18.8	25 0 46.6	- 5 30.7	-1.0200	0.5500	+0.2316	-14	-73
40 Arietis	6.3	0.26	5.0	17 50.4	2 37.4	- 3 43.8	-1.1270	0.5516	0.2288	-22	-72
π Arietis	5.7	0.26	4.7	17 1.2	2 58.0	- 3 23.9	-0.2177	0.5517	0.2286	+32	-48
ρ^1 Arietis	7.0	0.23	5.0	17 18.1	5 25.3	- 1 1.8	+0.0523	0.5538	0.2244	+46	-33
ρ^2 Arietis	6.0	0.24	5.2	17 54.0	5 48.0	- 0 39.9	-0.4673	0.5541	0.2239	+19	-61
ρ^3 Arietis	6.0	-0.22	+ 5.2	+17 35.9	6 3.7	- 0 24.8	-0.1046	0.5541	+0.2236	+38	-41
50 Arietis	6.8	0.19	5.2	17 34.9	7 50.9	+ 1 18.6	+0.3087	0.5554	0.2206	+62	-20
53 Arietis	6.3	0.16	5.4	17 28.1	10 49.5	+ 4 10.8	+1.0730	0.5580	0.2155	+90	+24
54 Arietis	6.3	0.16	5.7	18 23.2	11 12.2	+ 4 32.6	+0.2243	0.5582	0.2154	+56	-23
δ Arietis	4.0	0.14	6.1	19 19.4	12 35.2	+ 5 52.7	-0.4282	0.5595	0.2122	+21	-57
τ_2 Arietis	5.0	-0.09	+ 6.6	+20 45.8	16 38.5	+ 9 47.0	-1.0380	0.5627	+0.2046	-16	-69

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
JANUARY.											
τ^6 Arietis	5.3	−0.08	+6.6	+20 21.6	25 17 17.7	+10 24.8	−0.4952	0.5632	+0.2034	+17	−60
65 Arietis	6.0	−0.07	6.7	20 25.5	17 59.9	+11 5.5	−0.4194	0.5635	0.2019	+21	−56
B. A. C. 1143	6.0	+0.07	7.1	20 35.5	26 2 18.9	− 4 54.1	+1.0210	0.5705	0.1846	+90	+25
B. A. C. 1189	6.0	0.09	7.6	21 55.3	4 31.3	− 2 46.7	+0.0824	0.5723	0.1797	+48	−26
32 Tauri	6.0	0.13	7.7	22 10.3	7 20.3	− 0 4.1	+0.3263	0.5745	0.1732	+63	−13
33 Tauri	6.3	+0.14	+8.0	+22 52.0	7 24.7	+ 0 0.1	−0.3616	0.5745	+0.1731	+24	−49
B. A. C. 1238	6.3	0.16	8.0	22 54.1	8 58.7	+ 1 30.4	−0.1295	0.5759	0.1693	+36	−36
36 Tauri	6.0	0.18	8.3	23 48.7	10 10.2	+ 2 48.7	−0.8206	0.5769	0.1662	− 3	−66
B. A. C. 1347	7.3	0.29	8.5	24 9.5	17 56.4	+10 7.2	+0.0218	0.5825	0.1469	+45	−26
62 Tauri	6.0	0.29	8.5	24 3.2	18 8.4	+10 18.7	+0.1563	0.5826	0.1463	+53	−19
k Tauri	6.0	+0.51	+8.8	+24 53.3	27 8 22.5	+ 0 1.1	+1.0110	0.5917	+0.1095	+90	+32
136 Tauri	5.3	0.83	8.7	27 35.3	28 4 6.6	− 5 6.6	−0.0975	0.6006	+0.0449	+38	−23
49 Aurigæ	5.7	1.04	7.8	28 6.4	19 39.5	+ 9 47.0	−0.3216	0.6015	−0.0062	+25	−32
54 Aurigæ	6.0	1.07	7.5	28 21.5	21 16.4	+11 19.8	−0.5895	0.6016	0.0113	+10	−50
25 Geminorum	6.5	1.07	7.5	28 17.8	21 56.5	+11 53.2	−0.5374	0.6016	0.0138	+13	−46
W. vi, 1656	8.2	+1.15	+6.7	+26 59.7	29 6 21.5	− 3 58.0	+0.5467	0.5994	−0.0413	+82	+11
47 Geminorum	6.0	1.18	6.3	27 2.0	9 11.9	− 1 14.7	+0.3782	0.5987	0.0505	+68	+ 1
53 Geminorum	6.3	1.21	6.3	28 5.1	10 53.9	+ 0 23.1	−0.7785	0.5978	0.0559	− 2	−62
59 Geminorum	6.9	1.24	6.0	27 50.8	14 9.3	+ 3 30.4	−0.7352	0.5967	0.0662	+ 1	−62
ι Geminorum	4.0	1.24	5.9	28 0.7	14 36.1	+ 3 56.1	−0.9330	0.5964	0.0676	−12	−62
b^2 Geminorum	6.3	+1.25	+5.7	+28 8.3	16 8.8	+ 5 24.9	−1.1700	0.5955	−0.0724	−34	−62
B. A. C. 2472	8.0	1.25	5.7	28 8.0	16 28.1	+ 5 43.5	−1.1890	0.5955	0.0734	−36	−62
υ Geminorum	4.3	1.26	5.4	27 8.1	18 29.6	+ 7 40.0	−0.3300	0.5944	0.0797	+25	−39
c Geminorum	6.0	1.27	4.7	26 2.4	21 39.1	+10 41.7	+0.5147	0.5927	0.0893	+79	+ 5
φ Geminorum	5.0	1.31	4.3	27 2.6	30 1 15.3	− 9 50.8	−0.8461	0.5905	0.0999	− 6	−63
ω^1 Cancri	6.0	+1.30	+3.9	+25 41.2	4 10.0	− 7 3.2	+0.2308	0.5886	−0.1082	+58	−12
ω^2 Cancri	6.3	1.30	3.8	25 23.1	4 20.1	− 6 45.0	+0.5006	0.5879	0.1092	+77	+ 2
ψ^1 Cancri	6.8	1.33	3.5	26 9.6	7 47.8	− 3 34.0	−0.6625	0.5858	0.1188	+ 6	−62
ψ^2 Cancri	5.7	1.33	3.5	25 50.0	7 53.9	− 6 28.2	−0.3414	0.5858	0.1188	+25	−43
λ Cancri	5.7	1.33	2.9	24 21.5	11 54.6	+ 0 23.0	+0.6618	0.5828	0.1298	+90	+ 8
υ^1 Cancri *mult.*	6.0	+1.34	+2.7	+24 53.1	14 20.9	+ 2 43.6	−0.1992	0.5809	−0.1362	+33	−37
υ^2 Cancri	5.8	1.34	2.6	24 30.0	15 8.2	+ 3 29.0	+0.0869	0.5802	0.1383	+49	−22
υ^3 Cancri	6.0	1.34	2.4	24 26.5	16 18.3	+ 4 36.4	−0.0187	0.5792	0.1412	+42	−28
υ^4 Cancri	5.7	1.35	2.4	24 26.9	16 54.3	+ 5 11.0	−0.1090	0.5788	0.1428	+37	−33
ξ Cancri	5.0	1.35	0.4	22 28.7	31 7 56.8	− 4 20.5	−0.5124	0.5652	0.1778	+16	−58
79 Cancri	6.3	+1.35	+0.4	+22 25.8	8 22.0	− 3 56.3	−0.5383	0.5649	−0.1787	+14	−60
B. A. C. 3138	6.3	1.34	+0.2	21 43.4	9 46.0	− 2 35.3	−0.0635	0.5636	0.1819	+40	−34
B. A. C. 3206	6.3	+1.32	−0.3	+20 15.0	14 34.0	+ 2 2.3	+0.5588	0.5594	−0.1915	+81	− 4
FEBRUARY.											
η Leonis	3.3	+1.24	−2.5	+17 17.1	1 9 36.1	− 3 35.3	−0.3277	0.5414	−0.2228	+26	−54
42 Leonis	6.0	1.20	3.1	15 30.9	16 22.8	+ 2 57.9	−0.0261	0.5352	0.2319	+42	−39
B. A. C. 3579	7.2	1.17	3.3	14 53.5	19 41.2	+ 6 9.8	−0.1430	0.5325	0.2367	+36	−46
ξ Leonis	5.7	1.16	3.5	14 41.3	21 18.3	+ 7 43.8	−0.3139	0.5310	0.2374	+27	−55
B. A. C. 3837	6.3	0 99	4.5	8 38.9	2 17 57.3	+ 3 44.2	+0.9504	0.5153	0.2545	+90	+ 9
B. A. C. 4039	7.5	+0.80	−5.4	+ 4 4.6	3 16 56.9	+ 2 3.4	−0.1498	0.5025	−0.2626	+36	−51
b Virginis	5.8	0.80	5.5	4 15.0	17 51.8	+ 2 56.6	−0.5766	0.5021	0.2628	+14	−78
10 Virginis	6.4	0.74	5.6	+ 2 29.8	23 3.9	+ 7 59.9	−0.0662	0.4999	0.2630	+40	−47
η Virginis	4.0	0.68	5.4	− 0 4.5	4 4 34.3	−10 39.0	+1.2510	0.4979	0.2631	+90	+29
γ Virginis (mean.)	3.1	0.58	5.8	0 51.9	16 25.6	+ 0 52.4	−1.0050	0.4949	0.2611	−13	−90
38 Virginis	6.2	+0.51	−5.7	− 2 58.4	22 42.4	+ 6 58.8	−0.3565	0.4940	−0.2593	+25	−64
Saturn				2 36.9	5 0 8.6	+ 8 22.6	−1.1170	0.4848	0.2594	−18	−90
k Virginis	5.9	0.48	5.8	3 14.2	2 14.5	+10 25.0	−0.9835	0.4935	0.2580	− 9	−90
θ Virginis	4.7	0.43	5.7	4 58.2	7 52.8	− 8 6.0	−0.5467	0.4933	0.2554	+15	−77
B. A. C. 4591	6.0	0.22	5.5	9 10.4	6 4 16.1	−11 43.4	−1.0420	0.4947	0.2425	−15	−90
λ Virginis	5.0	+0.05	−5.2	−12 52.8	21 28.2	+ 4 26.6	−1.0140	0.4987	−0.2271	−16	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x′*	*y′*	N.	S.
		s	″	° ′	d h m	h m				°	°
B. A. C. 4896	6.6	-0.16	- 4.6	-17 20.8	7 14 34.2	- 2 56.8	+0.1933	0.5052	-0.2073	+46	-33
10 Libræ	6.5	0.16	4.3	17 55.0	14 42.2	- 2 49.0	+0.7918	0.5052	0.2071	+72	- 1
ι^1 Libræ	5.0	0.26	4.4	19 23.3	8 1 11.4	+ 7 21.6	+0.3225	0.5100	0.1932	+51	-27
ι^2 Libræ	6.5	0.27	4.5	19 14.7	1 45.3	+ 7 54.5	+0.0553	0.5105	0.1922	+37	-41
δ Scorpii	2.3	0.51	4.8	22 19.1	9 1 6.0	+ 6 32.2	-0.6061	0.5235	0.1544	- 1	-86
19 Scorpii	5.1	-0.62	- 4.8	-23 54.8	10 48.9	- 8 3.5	-0.2540	0.5295	-0.1360	+15	-59
σ Scorpii	3.4	0.62	4.7	25 20.2	11 2.8	- 7 50.0	+1.2850	0.5297	0.1355	+65	+47
25 Scorpii	7.0	0.74	5.1	25 20.1	23 4.4	+ 3 47.9	-0.2012	0.5364	0.1108	+15	-56
31 Ophiuchi	6.7	0.81	5.5	25 29.6	10 7 16.0	+11 43.1	-0.8582	0.5413	0.0926	-22	-90
B. A. C. 5800	7.5	0.86	5.3	26 51.5	11 32.7	- 8 9.0	+0.2657	0.5439	0.0828	+36	-29
A Ophiuchi	4.9	-0.87	- 5.5	-26 26.8	12 5.1	- 7 37.7	-0.2308	0.5439	-0.0815	+10	-58
B. A. C. 5813	6.8	0.87	5.6	26 23.6	12 28.8	- 7 14.8	-0.3206	0.5445	0.0806	+ 5	-64
38 Ophiuchi	6.7	0.87	5.4	26 30.8	13 5.6	- 6 39.3	-0.2381	0.5445	0.0791	+ 9	-56
43 Ophiuchi	5.8	0.89	5.7	28 2.4	15 37.1	- 4 12.9	+1.2470	0.5463	0.0732	+62	+46
3 Sagittarii *var.*	4.6	0.99	6.1	27 47.5	11 2 22.1	+ 6 9.6	+0.3264	0.5511	0.0469	+36	-25
B. A. C. 6127	5.1	-1.05	- 6.4	-28 28.2	11 19.9	- 9 11.6	+0.7469	0.5543	-0.0240	+62	0
B. A. C. 6194	5.1	1.07	7.1	27 4.9	15 41.5	- 4 59.4	-0.8478	0.5562	-0.0127	-31	-90
φ Sagittarii	3.7	1.14	7.8	27 6.1	12 3 35.0	+ 6 28.5	-0.7859	0.5594	+0.0188	-26	-90
τ Sagittarii	3.6	1.20	8.1	27 49.7	12 41.3	- 8 45.0	+0.2844	0.5606	0.0432	+34	-28
B. A. C. 6628	5.9	1.23	8.5	28 4.4	20 11.3	- 1 31.3	+0.9434	0.5608	0.0631	+62	+13
B. A. C. 6666	5.8	-1.24	- 8.7	-27 12.3	22 30.1	+ 0 42.5	+0.1631	0.5610	+0.0694	+29	-34
ω Sagittarii	5.1	1.27	9.5	26 35.2	13 9 37.8	+11 25.9	+0.4314	0.5599	0.0984	+46	-20
A Sagittarii	5.3	1.27	9.6	26 29.3	10 58.9	-11 15.9	+0.4631	0.5599	0.1019	+49	-18
B. A. C. 7077	6.4	1.30	10.3	25 18.5	14 1 40.4	+ 2 53.9	+0.9691	0.5564	0.1385	+65	+15
B. A. C. 7237	6.9	1.30	10.7	24 11.2	10 30.2	+11 25.0	+1.0900	0.5539	0.1589	+66	+24
χ Capricorni	5.4	-1.30	-11.1	-21 37.6	17 24.8	- 5 55.0	-0.4581	0.5516	+0.1742	+ 8	-73
27 Capricorni	6.5	1.30	11.1	20 59.4	17 51.4	- 5 29.3	-1.0520	0.5516	0.1752	-27	-90
				NEW	*MOON.*						
4 Ceti	6.0	1.12	7.9	3 8.8	18 5 18.8	+ 3 12.9	+0.5507	0.5274	0.2786	+77	-16
5 Ceti	6.0	-1.12	- 7.8	- 3 2.7	5 32.4	+ 3 26.1	+0.5099	0.5274	+0.2787	+74	-18
B. A. C. 5	5.7	1.11	7.8	2 49.2	5 47.2	+ 3 40.5	+0.2484	0.5274	0.2787	+63	-26
10 Ceti	6.2	1.07	6.8	- 0 38.6	14 25.6	-11 58.0	+0.5463	0.5278	0.2801	+77	-16
B. A. C. 237	6.7	1.03	5.3	+ 2 48.2	19 2 16.9	- 0 29.1	+0.3588	0.5293	0.2791	+64	-25
73 Piscium	5.9	1.00	4.2	5 4.9	8 44.8	+ 5 46.4	-0.1555	0.5308	0.2770	+36	-52
77 Piscium	5.9	-0.99	- 4.4	+ 4 20.2	9 12.0	+ 6 12.7	+0.7252	0.5308	+0.2767	+90	- 6
ε Piscium	5.5	0.99	4.1	5 4.9	10 25.5	+ 7 23.8	+0.3077	0.5313	0.2763	+61	-27
88 Piscium	6.2	0.98	3.6	6 25.6	13 25.4	+10 18.0	-0.2299	0.5321	0.2750	+32	-55
B. A. C. 410	6.0	0.94	3.1	6 51.1	17 17.2	- 9 57.9	+0.3969	0.5331	0.2728	+67	-22
JUPITER				7 55.9	21 40.0	- 5 43.7	+0.4929	0.5273	0.2666	+73	-17
54 Ceti	5.5	-0.87	- 0.9	+10 30.8	20 6 17.0	+ 2 36.4	+0.1721	0.5381	+0.2627	+53	-32
B. A. C. 609	6.0	0.84	- 0.1	11 46.5	10 16.4	+ 6 28.0	-0.0624	0.5401	0.2587	+39	-45
MARS				14 25.3	20 44.3	- 7 26.0	-0.0961	0.5198	0.2365	+39	-44
29 Arietis	6.3	0.71	+ 1.9	14 33.6	21 1 16.0	- 2 3.4	+0.8632	0.5480	0.2401	+90	+ 8
36 Arietis	6.5	0.68	3.4	17 18.7	6 15.8	+ 1 45.9	-0.7384	0.5511	0.2325	+ 4	-72
40 Arietis	6.3	-0.66	+ 3.7	+17 50.4	8 6.1	+ 3 32.3	-0.8498	0.5524	+0.2296	- 2	-72
π Arietis	5.7	0.65	3.4	17 1.2	8 26.7	+ 3 52.2	+0.0607	0.5531	0.2292	+47	-33
ρ^1 Arietis	7.0	0.61	3.7	17 18.1	10 53.2	+ 6 13.4	+0.3305	0.5544	0.2249	+63	-19
ρ^2 Arietis	6.0	0.62	3.9	17 54.0	11 16.0	+ 6 35.4	-0.1888	0.5544	0.2244	+34	-46
ρ^3 Arietis	6.0	0.61	3.9	17 35.9	11 31.6	+ 6 50.5	+0.1737	0.5552	0.2240	+54	-27
50 Arietis	6.8	-0.58	+ 4.1	+17 34.9	13 18.5	+ 8 33.6	+0.5868	0.5556	+0.2196	+82	- 5
54 Arietis	6.3	0.54	4.6	18 23.2	16 39.4	+11 47.2	+0.5025	0.5585	0.2148	+76	- 9
δ Arietis	4.0	0.54	4.9	19 19.4	18 2.3	-10 52.9	-0.1518	0.5591	0.2119	+36	-42
τ^1 Arietis	5.0	0.51	5.7	20 45.8	22 5.7	- 6 58.3	-0.7640	0.5615	0.2043	+ 2	-66
τ^2 Arietis	5.3	0.49	5.6	20 21.5	22 11.1	- 6 20.6	-0.2210	0.5622	0.2029	+32	-45
65 Arietis	6.0	-0.48	+ 5.7	+20 25.5	22 11.2	- 5 39.9	-0.1474	0.5630	+0.2016	+36	-41

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
B. A. C. 1170	6.3	-0.35	+7.2	+23 5.6	22 9 21.0	+ 3 51.8	-0.9570	0.5692	+0.1803	- 9	-67
B. A. C. 1189	6.0	0.33	6.9	21 55.3	10 0.8	+ 4 30.1	+0.3493	0.5698	0.1785	+65	-13
32 Tauri	6.0	0.28	7.1	22 10.3	12 50.9	+ 7 13.8	+0.5927	0.5718	0.1718	+85	0
33 Tauri	6.3	0.29	7.4	22 52.0	12 55.3	+ 7 18.0	-0.0979	0.5718	0.1718	+38	-35
B. A. C. 1238	6.3	0.26	7.5	22 54.1	14 30.0	+ 8 49.1	+0.1335	0.5729	0.1678	+51	-22
36 Tauri	6.0	-0.23	+7.5	+23 48.7	15 52.2	+10 8.1	-0.5590	0.5737	+0.1646	+13	-59
χ Tauri	5.7	0.14	8.7	25 22.7	23 9.5	- 6 51.5	-1.0140	0.5781	0.1462	-16	-65
B. A. C. 1347	7.3	0.13	8.2	24 9.5	23 32.6	- 6 28.2	+0.2788	0.5786	0.1452	+61	-13
62 Tauri	6.0	-0.12	8.3	24 3.2	23 44.7	- 6 27.6	+0.4140	0.5786	0.1446	+70	- 6
136 Tauri	5.3	+0.51	9.7	27 35.4	24 10 17.0	+ 2 51.3	+0.1138	0.5924	+0.0428	+50	-12
49 Aurigæ	5.7	+0.78	+9.1	+28 6.4	25 2 11.7	- 5 53.3	-0.1346	0.5929	-0.0080	+36	-22
53 Aurigæ	6.0	0.81	9.3	29 4.6	3 23.3	- 4 44.6	-1.1400	0.5927	0.0118	-31	-61
54 Aurigæ	6.0	0.82	9.0	28 21.5	3 50.9	- 4 18.2	-0.4107	0.5927	0.0133	+20	-38
25 Geminorum	6.5	0.83	8.9	28 17.8	4 32.0	- 3 38.7	-0.3579	0.5926	0.0153	+23	-35
28 Geminorum	6.0	0.86	9.1	29 4.8	5 49.2	- 2 34.7	-1.1830	0.5925	0.0196	-36	-61
W. vi, 1656	8.2	+0.95	+7.9	+26 59.7	13 9.8	+ 4 37.9	+0.7254	0.5906	-0.0427	+90	+20
47 Geminorum	6.0	1.00	7.7	27 2.0	16 4.8	+ 7 25.8	+0.5518	0.5895	0.0516	+83	+10
53 Geminorum	6.3	1.03	7.9	28 5.1	17 49.4	+ 9 6.2	-0.6255	0.5889	0.0571	+ 8	-56
59 Geminorum	6.9	1.07	7.5	27 50.8	21 9.9	-11 41.4	-0.5883	0.5876	0.0672	+10	-54
ι Geminorum	4.0	1.09	7.5	28 0.7	21 37.4	-11 15.0	-0.7852	0.5872	0.0686	- 2	-62
b^2 Geminorum	6.3	+1.12	+7.3	+28 8.3	23 12.6	- 9 43.7	-1.0320	0.5866	-0.0732	-20	-62
B. A. C. 2472	8.0	1.12	7.3	28 8.0	23 32.4	- 9 24.6	-1.0510	0.5860	0.0743	-22	-62
υ Geminorum	4.3	1.14	6.9	27 8.1	26 1 37.1	- 7 24.9	-0.1883	0.5852	0.0805	+34	-31
e Geminorum	6.0	1.17	6.1	26 2.4	4 51.5	- 4 18.2	+0.6615	0.5835	0.0900	+90	+12
φ Geminorum	5.0	1.23	5.8	27 2.6	• 8 33.4	- 0 45.0	-0.7221	0.5813	0.1005	+ 3	-63
ω^1 Cancri	6.0	+1.25	+5.4	+25 41.2	11 32.6	+ 2 7.1	+0.3621	0.5795	-0.1088	+66	- 5
ω^2 Cancri	6.3	1.25	5.3	25 23.1	11 52.2	+ 2 25.9	+0.6387	0.5795	0.1097	+90	+ 9
ψ^1 Cancri	6.8	1.29	5.1	26 9.6	15 16.1	+ 5 41.9	-0.5499	0.5776	0.1190	+13	-55
ψ^2 Cancri	5.7	1.29	5.0	25 50.0	15 22.4	+ 5 48.0	-0.2269	0.5769	0.1192	+31	-37
λ Cancri	5.7	1.31	4.2	24 21.6	19 29.3	+ 9 45.4	+0.7809	0.5741	0.1302	+90	+15
υ^1 Cancri *mult.*	6.0	+1.35	+4.0	+24 53.2	21 59.2	-11 50.4	-0.0964	0.5725	-0.1366	+38	-31
υ^2 Cancri	5.8	1.35	3.8	24 30.1	22 47.6	-11 3.9	+0.1912	0.5720	0.1387	+55	-17
υ^3 Cancri	6.0	1.37	3.7	24 26.6	23 59.6	- 9 54.6	+0.0827	0.5711	0.1416	+48	-23
υ^4 Cancri	5.7	1.37	3.7	24 27.0	27 0 36.5	- 9 19.1	-0.0121	0.5705	0.1432	+43	-28
ξ Cancri	5.0	1.46	1.3	22 28.7	16 0.3	+ 5 30.7	-0.4519	0.5585	0.1781	+19	-55
79 Cancri	6.3	+1.47	+1.3	+22 25.8	16 26.0	+ 5 55.5	-0.4778	0.5576	-0.1790	+18	-57
B. A. C. 3138	6.3	1.46	1.0	21 43.4	17 51.9	+ 7 18.3	0.0000	0.5568	0.1821	+44	-31
B. A. C. 3206	6.3	1.47	+0.2	20 15.0	22 46.0	-11 58.0	+0.6160	0.5527	0.1917	+86	- 1
η Leonis	3.3	+1.50	-2.6	+17 17.1	28 18 9.1	+ 6 45.5	-0.3268	0.5373	-0.2237	+26	-55
MARCH.											
42 Leonis	6.0	+1.49	-3.5	+15 30.8	1 1 1.8	-10 35.2	-0.0368	0.5316	-0.2326	+42	-40
B. A. C. 3579	7.2	1.49	3.8	14 53.3	4 22.9	- 7 20.6	-0.1666	0.5286	0.2366	+35	-47
i Leonis	5.7	1.48	4.1	14 41.1	6 1.1	- 5 45.5	-0.3422	0.5278	0.2383	+26	-57
B. A. C. 3837	6.3	1.40	6.2	8 38.7	2 2 51.6	- 9 33.6	+0.8726	0.5144	0.2564	+90	+ 4
B. A. C. 4039	7.5	1.32	8.1	4 4.5	3 1 55.1	-11 10.5	-0.2823	0.5032	0.2654	+29	-59
b Virginis	5.8	+1.31	-8.3	+ 4 14.9	2 49.9	-10 17.4	-0.7111	0.5027	-0.2654	+ 7	-85
10 Virginis	6.4	1.27	8.5	+ 2 29.7	8 1.8	- 5 14.3	-0.2116	0.5012	0.2660	+33	-55
η Virginis	4.0	1.23	8.5	- 0 4.5	13 31.3	+ 0 5.9	+1.0920	0.4995	0.2661	+90	+16
γ Virginis (*mean.*)	3.1	1.18	9.2	0 52.0	4 1 19.7	+11 34.4	-1.1840	0.4973	0.2641	-23	-90
SATURN				2 1.0	6 28.3	- 7 25.6	-1.2970	0.4990	0.2638	-33	-90
38 Virginis	6.2	+1.12	-9.5	- 2 58.5	7 34.3	- 6 21.4	-0.5475	0.4962	-0.2622	+16	-77
k Virginis	5.9	1.11	9.6	3 14.3	11 5.1	- 2 56.5	-1.1810	0.4962	0.2609	-23	-90
h Virginis	5.8	0.98	9.4	9 37.0	5 5 10.8	- 9 21.0	+1.1250	0.4963	0.2508	+80	+19
B. A. C. 4591	6.0	0.92	9.7	9 10.5	12 54.4	- 1 50.4	-1.2760	0.4974	0.2451	-34	-90
λ Virginis	5.0	0.81	9.5	12 52.9	6 5 58.0	- 9 15.7	-1.2750	0.5013	0.2292	-37	-90
B. A. C. 4896	6.6	+0.69	-8.7	-17 20.8	22 56.5	+ 7 13.3	-0.0698	0.5071	-0.2087	+32	-48

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
10 Libræ	6.5	+0.69	−8.6	−17 55.0	6 23 4.4	+ 7 21.0	+0.5316	0.5094	−0.2086	+65	−16
ι^1 Libræ	5.0	0.61	8.4	19 23.3	7 9 30.1	− 6 32.9	+0.0571	0.5119	0.1940	+37	−40
ι^2 Libræ	6.5	0.61	8.5	19 14.7	10 3.7	− 5 59.3	−0.2100	0.5119	0.1934	+24	−56
B. A. C. 5254	5.8	0.43	7.5	23 39.6	8 6 12.0	−10 27.9	+1.1090	0.5216	0.1601	+66	+23
δ Scorpii	2.3	0.40	8.0	22 19.1	9 20.6	− 7 25.4	−0.8706	0.5232	0.1542	−16	−90
19 Scorpii	5.1	+0.32	−7.6	−23 54.8	19 3.8	+ 1 59.2	−0.5163	0.5282	−0.1357	+ 1	−78
σ Scorpii	3.4	0.32	7.1	25 20.2	19 17.7	+ 2 12.7	+1.0270	0.5284	0.1352	+65	+17
25 Scorpii	7.0	0.20	7.3	25 20.1	9 7 21.5	−10 7.2	−0.4567	0.5346	0.1101	+ 1	−74
31 Ophiuchi	6.7	0.13	7.3	25 59.6	15 35.5	− 2 9.6	−1.1110	0.5391	0.0918	−40	−90
B. A. C. 5800	7.5	0.09	6.8	26 51.5	19 53.8	+ 1 59.9	+0.0221	0.5411	0.0820	+23	−43
A Ophiuchi	4.9	+0.08	−7.0	−26 26.8	20 26.5	+ 2 31.5	−0.4778	0.5413	−0.0805	− 3	−76
B. A. C. 5813	6.8	0.08	7.0	26 23.6	20 50.3	+ 2 54.6	−0.5678	0.5413	0.0796	+ 8	−85
38 Ophiuchi	6.7	0.08	7.0	26 30.8	21 27.3	+ 3 30.3	−0.4852	0.5419	0.0783	− 3	−77
43 Ophiuchi	5.8	+0.05	6.5	28 2.4	10 0 0.0	+ 5 57.8	+1.0080	0.5426	0.0722	+62	+18
3 Sagittarii *var.*	4.6	−0.04	6.7	27 47.5	10 50.4	− 7 34.2	+0.0916	0.5473	0.0458	+23	−39
B. A. C. 6127	5.1	−0.12	−6.6	−28 28.2	19 53.5	+ 1 9.9	+0.5242	0.5501	−0.0230	+46	−14
B. A. C. 6194	5.1	0.17	7.1	27 4.9	11 0 17.9	+ 5 24.9	−1.0740	0.5513	−0.0117	−44	−90
φ Sagittarii	3.7	0.27	6.6	27 6.1	12 19.7	− 6 59.0	−0.9984	0.5539	+0.0198	−38	−90
τ Sagittarii	3.6	0.35	7.0	27 49.7	21 32.8	+ 1 54.2	+0.0870	0.5554	0.0439	+22	−38
B. A. C. 6628	5.9	0.42	6.9	28 4.4	12 5 8.5	+ 9 13.8	+0.7586	0.5555	0.0640	+62	0
B. A. C. 6666	5.8	−0.43	−7.2	−27 12.3	7 29.0	+11 29.3	−0.0252	0.5555	+0.0702	+19	−45
ω Sagittarii	5.1	0.51	7.5	26 35.1	18 45.0	− 1 39.0	+0.2631	0.5547	0.0990	+37	−29
B. A. C. 7077	6.4	0.65	7.7	25 18.4	13 10 58.2	−10 0.3	+0.8230	0.5521	0.1389	+65	+ 4
B. A. C. 7237	6.9	0.71	8.0	24 11.1	19 52.9	− 1 24.2	+0.9616	0.5498	0 1595	+66	+12
χ Capricorni	5.4	0.75	8.5	21 37.5	14 2 50.6	+ 5 18.8	−0.5799	0.5480	0.1749	+ 1	−83
φ Capricorni	5.5	−0.77	−8.6	−21 5.9	6 1.0	+ 8 22.6	−0.5683	0.5471	+0.1816	+ 3	−82
33 Capricorni	5.7	0.80	8.6	21 18.5	9 50.8	−11 55.5	+0.3623	0.5462	0.1895	+52	−24
35 Capricorni	6.2	0.80	8.4	21 39.6	11 14.1	−10 35.1	+0.9965	0.5456	0.1923	+68	+13
37 Capricorni	6.0	0.82	8.6	20 33.8	14 41.2	− 7 15.0	+0.5218	0.5444	0.1991	+62	−16
38 Capricorni	6.9	0.82	8.6	20 43.7	14 42.9	− 7 13.4	+0.6908	0.5448	0.1988	+69	− 6
ε Capricorni	4.7	−0.82	−8.8	−19 56.8	15 42.2	− 6 16.2	+0.0785	0.5443	+0.2013	+38	−40
κ Capricorni	5.0	0.84	8.9	19 21.3	18 13.6	− 3 50.0	−0.0261	0.5437	0.2058	+33	−45
B. A. C. 7550	6.3	0.84	8.7	20 6.6	18 29.3	− 3 34.7	+0.8166	0.5436	0.2064	+70	+ 1
B. A. C. 7835	6.5	0.94	9.1	13 27.9	15 16 5.4	− 6 42.2	−1.2160	0.5375	0.2422	−31	−90
56 Aquarii	6.3	0.94	8.8	−15 8.1	16 12.5	− 6 35.3	+0.5369	0.5375	0.2423	+68	−16
				NEW	*MOON.*						
ε Piscium	5.5	−1.13	−4.4	+ 5 4.9	18 18 38.2	− 6 35.7	+0.4105	0.5389	+0.2821	+68	−22
ζ Piscium	4.8	1.14	4.0	7 0.5	21 4.7	− 4 14.0	−0.8322	0.5388	0.2808	+ 1	−83
88 Piscium	6.2	1.13	4.1	6 25.6	21 32.1	− 3 47.5	−0.1217	0.5398	0.2806	+38	−50
B. A. C. 410	6.0	1.11	3.6	6 51.0	19 1 18.4	− 0 58.8	+0.5099	0.5409	0.2786	+75	−17
54 Ceti	5.5	−1.09	−1.8	+10 30.8	13 55.7	−11 57.4	+0.3045	0.5467	+0.2680	+61	−26
JUPITER				10 7.3	15 28.9	−10 27.4	+1.1140	0.5392	0.2631	+90	+20
B. A. C. 609	6.0	1.08	−1.2	11 46.5	17 43.9	− 8 17.0	+0.0582	0.5488	0.2643	+47	−37
29 Arietis	6.3	1.01	+0.8	14 33.6	20 8 20.8	+ 5 49.0	+1.0082	0.5568	0.2451	+90	+16
36 Arietis	6.5	0.97	1.9	17 18.7	13 11.9	+10 29.6	−0.5674	0.5598	0.2373	+14	−68
40 Arietis	6.3	−0.96	+2.3	+17 50.3	14 58.9	−11 47.3	−0.6741	0.5610	+0.2342	+ 8	−72
π Arietis	5.7	0.97	2.1	17 1.1	15 18.9	−11 28.1	+0.2230	0.5611	0.2340	+56	−26
ρ^1 Arietis	7.0	0.94	2.4	17 18.1	17 41.3	− 9 10.9	+0.4894	0.5629	0.2294	+73	−12
ρ^2 Arietis	6.0	0.95	2.5	17 54.0	18 3.4	− 8 49.6	−0.0233	0.5629	0.2287	+43	−37
ρ^3 Arietis	6.0	0.94	2.5	17 35.9	18 18.6	− 8 35.0	+0.3345	0.5630	0.2282	+63	−19
50 Arietis	6.8	−0.93	+2.7	+17 34.9	20 2.5	− 6 54.9	+0.7456	0.5641	+0.2252	+90	+ 3
54 Arietis	6.3	0.90	3.2	18 23.2	23 17.8	− 3 46.9	+0.6627	0.5658	0.2188	+90	− 1
δ Arietis	4.0	0.90	3.5	19 19.4	21 0 38.3	− 2 29.3	+0.0183	0.5674	0.2160	+45	−33
ζ Arietis	4.7	0.90	4.1	20 39.0	1 59.0	− 1 11.6	−1.0200	0.5679	0.2134	−15	−69
τ^1 Arietis	5.0	0.88	4.3	20 45.8	4 35.1	+ 1 18.5	−0.5851	0.5701	0.2080	+12	−65
τ^2 Arietis	5.3	−0.86	+4.2	+20 21.6	5 13.3	+ 1 55.3	−0.0483	0.5701	+0.2065	+41	−36

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
65 Arietis	6.0	−0.85	+ 4.3	+20 25.5	21 5 54.5	+ 2 34.9	+0.0283	0.5703	+0.2051	+46	−32
B. A. C. 1170	6.3	0.77	6.0	23 5.6	15 33.2	+11 51.5	−0.7803	0.5766	0.1830	+ 1	−67
26 Tauri	7.0	0.76	6.3	23 31.8	15 47.2	−11 55.1	−1.1670	0.5766	0.1824	−28	−66
B. A. C. 1189	6.0	0.74	5.7	21 55.3	16 12.1	−11 31.1	+0.5210	0.5766	0.1813	+46	− 4
32 Tauri	6.0	0.71	6.0	22 10.3	18 58.2	− 8 51.4	+0.7637	0.5784	0.1746	+90	+10
33 Tauri	6.3	−0.72	+ 6.2	+22 52.0	19 2.4	− 8 47.4	+0.0769	0.5786	+0.1743	+48	−26
B. A. C. 1238	6.3	0.70	6.3	22 54.1	20 34.9	− 7 18.6	+0.3091	0.5797	0.1705	+62	−14
36 Tauri	6.0	0.68	6.7	23 48.7	21 55.2	− 6 1.5	−0.3761	0.5802	0.1670	+23	−49
χ Tauri	5.7	0.59	7.8	25 22.7	22 5 3.2	+ 0 49.6	−0.8271	0.5838	0.1479	− 3	−64
B. A. C. 1347	7.3	0.58	7.4	24 9.5	5 25.9	+ 1 11.5	+0.4537	0.5842	0.1469	+73	− 4
62 Tauri	6.0	−0.56	+ 7.4	+24 3.2	5 37.8	+ 1 22.9	+0.5893	0.5842	+0.1463	+85	+ 3
W. iv, 1421	6.0	−0.29	9.2	27 53.9	23 9.7	− 5 47.8	−1.1630	0.5913	0.0949	−32	−62
136 Tauri	5.3	+0.02	9.8	27 35.4	23 15 41.4	+10 3.0	+0.2877	0.5939	+0.0427	+62	− 3
49 Aurigæ	5.7	0.31	9.9	28 6.5	24 7 32.5	+ 1 14.8	+0.0323	0.5919	−0.0085	+46	−13
53 Aurigæ	6.0	0.35	10.1	29 4.7	8 44.0	+ 2 23.4	−0.9705	0.5914	0.0123	−15	−61
54 Aurigæ	6.0	+0.36	+ 9.9	+28 21.6	9 11.6	+ 2 49.9	−0.2435	0.5914	−0.0136	+30	−28
25 Geminorum	6.5	0.37	9.8	28 17.9	9 52.8	+ 3 29.5	−0.1907	0.5913	0.0158	+33	−26
28 Geminorum	6.0	0.40	10.0	29 4.9	11 10.0	+ 4 43.4	−1.0140	0.5913	0.0199	−19	−61
W. vi, 1656	8.2	0.51	9.0	26 59.8	18 31.5	+11 46.9	+0.8868	0.5879	0.0431	+90	+30
47 Geminorum	6.0	0.56	8.9	27 2.1	21 27.2	− 9 24.5	+0.7115	0.5879	0.0521	+90	+19
53 Geminorum	6.3	+0.60	+ 9.0	+28 5.1	23 12.4	− 7 42.5	−0.4656	0.5860	−0.0574	+18	−44
59 Geminorum	6.9	0.66	8.8	27 50.8	25 2 34.1	− 4 29.9	−0.4301	0.5839	0.0675	+20	−44
ι Geminorum	4.0	0.68	8.8	28 0.7	3 1.8	− 4 3.3	−0.6325	0.5839	0.0689	+ 8	−57
b^1 Geminorum	5.3	0.70	8.8	28 30.4	4 26.3	− 2 42.3	−1.0710	0.5828	0.0731	−23	−62
b^3 Geminorum	6.3	0.71	8.8	28 8.3	4 37.6	− 2 31.3	−0.8766	0.5826	0.0736	− 8	−62
B. A. C. 2472	8.0	+0.71	+ 8.7	+28 8.0	4 57.6	− 2 12.0	−0.8956	0.5826	−0.0745	− 9	−62
ν Geminorum	4.3	0.74	8.3	27 8.1	7 3.2	− 0 11.4	−0.0309	0.5817	0.0807	+42	−23
e Geminorum	6.0	0.79	7.6	26 2.4	10 19.3	+ 3 6.9	+0.8185	0.5797	0.0911	+90	+21
φ Geminorum	5.0	0.86	7.7	27 2.6	14 3.3	+ 6 32.4	−0.5716	0.5773	0.1006	+12	−55
ω^1 Cancri	6.0	0.89	7.0	25 41.2	17 4.5	+ 9 26.3	+0.5137	0.5749	0.1089	+79	+ 2
ω^2 Cancri	6.3	+0.89	+ 6.8	+25 23.1	17 24.3	+ 9 45.4	+0.7877	0.5742	−0.1098	+90	+17
ψ^1 Cancri	6.8	0.95	6.8	26 9.6	20 50.7	−10 56.1	−0.4074	0.5719	0.1190	+21	−46
ψ^2 Cancri	5.7	0.95	6.7	25 50.0	20 57.0	−10 50.0	−0.0811	0.5719	0 1192	+39	−29
λ Cancri	5.7	1.00	5.9	24 21.6	26 1 7.1	− 6 49.5	+0.9283	0.5690	0.1298	+90	+24
ν^1 Cancri *mult.*	6.0	1.04	5.8	24 53.2	3 39.0	− 4 23.2	+0.0450	0.5665	0.1363	+46	−24
ν^2 Cancri	5.8	+1.05	+ 5.6	+24 30.1	4 28.2	− 3 35.9	+0.3307	0.5658	−0.1383	+64	−10
ν^3 Cancri	6.0	1.07	5.5	24 26.6	5 41.1	− 2 25.7	+0.2235	0.5652	0.1411	+57	−16
ν^4 Cancri	5.7	1.08	5.4	24 27.0	6 18.6	− 1 49.6	+0.1265	0.5652	0.1428	+51	−21
ξ Cancri	5.0	1.24	3.1	22 28.8	21 57.3	−10 44.8	−0.3311	0.5521	0.1774	+26	−48
79 Cancri	6.3	1.24	3.0	22 25.9	22 23.6	−10 19.5	−0.3591	0.5512	0.1783	+24	−50
B. A. C. 3138	6.3	+1.26	+ 2.6	+21 43.4	23 51.0	− 8 55.1	+0.1186	0.5503	−0.1812	+51	−25
B. A. C. 3206	6.3	1.29	+ 1.7	20 15.0	27 4 50.5	− 4 6.0	+0.7355	0.5461	0.1906	+90	+ 5
η Leonis	3.3	1.42	− 1.3	17 17.1	28 0 35.7	− 9 0.4	−0.2377	0.5302	0.2224	+31	−49
42 Leonis	6.0	1.45	2.4	15 30.9	7 36.4	− 2 13.1	+0.0424	0.5250	0.2314	+46	−36
B. A. C. 3579	7.2	1.46	2.8	14 53.4	11 1.4	+ 1 5.5	−0.0919	0.5231	0.2355	+39	−43
i Leonis	5.7	+1.46	− 3.0	+14 41.2	12 41.5	+ 2 42.4	−0.2705	0.5218	−0.2371	+30	−53
B. A. C. 3837	6.3	1.48	6.3	8 38.7	29 9 54.4	− 0 43.2	+0.9461	0.5093	0.2554	+90	+ 8
B. A. C. 4039	7.5	1.48	8.9	4 4.6	30 9 18.4	− 1 59.5	−0.2784	0.5000	0.2650	+30	−59
b Virginis	5.8	1.49	9.0	4 15.0	10 13.6	− 1 6.0	−0.7099	0.4999	0.2653	+ 8	−85
10 Virginis	6.4	1.48	9.5	+ 2 29.8	15 29.3	+ 4 0.9	−0.2142	0.4982	0.2660	+33	−55
η Virginis	4.0	+1.46	−10.0	− 0 4.5	21 2.4	+ 9 24.7	+1.0890	0.4969	−0.2661	+90	+15
γ Virginis (*mean.*)	3.1	1.46	10.9	0 52.0	31 8 56.9	− 3 0.7	−1.2160	0.4953	0.2646	−25	−90
SATURN				1 11.5	10 6.4	− 1 53.2	−1.1710	0.4989	0.2659	−22	−90
38 Virginis	6.2	1.44	11.3	2 58.5	15 14.0	+ 3 6.5	−0.5859	0.4953	0.2629	+14	−80
k Virginis	5.9	+1.44	−11.4	− 3 14.3	18 45.9	+ 6 32.1	−1.2260	0.4949	−0.2617	−24	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
θ Virginis	4.7	+1.45	-11.7	- 4 58.3	1 0 23.4	-11 59.8	-0.8058	0.4953	-0.2593	+ 1	-90
h Virginis	5.8	1.42	12.1	9 37.0	12 55.3	+ 0 11.0	+1.0660	0.4966	0.2522	+80	-14
B. A. C. 4591	6.0	1.41	12.3	9 10.5	20 39.5	+ 7 42.4	-1.3500	0.4969	0.2468	-42	-90
λ Virginis	5.0	1.35	12.3	12 52.9	2 13 42.3	+ 0 16.3	-1.3555	0.5027	0.2308	-47	-79
B. A. C. 4896	6.6	1.31	11.8	17 20.9	3 6 38.5	- 7 17.0	-0.1799	0.5097	0.2102	+27	-54
10 Libræ	6.5	+1.31	-11.7	-17 55.1	6 46.3	- 7 9.4	+0.4311	0.5091	-0.2102	+60	-21
ι¹ Libræ	5.0	1.28	11.5	19 23.4	17 10.3	+ 2 56.0	-0.0516	0.5131	0.1953	+31	-47
ι² Libræ	6.5	1.28	11.6	19 14.8	17 43.8	+ 3 28.5	-0.3191	0.5137	0.1944	+18	-63
B. A. C. 5254	5.8	1.21	10.2	23 39.7	4 13 49.2	- 1 3.4	+0.9922	0.5232	0.1610	+66	+14
δ Scorpii	2.3	1.19	10.4	22 19.2	16 57.5	+ 1 59.2	-0.9906	0.5246	0.1551	-24	-90
19 Scorpii	5.1	+1.15	- 9.9	-23 54.9	5 2 40.3	+11 23.1	-0.6378	0.5294	-0.1362	- 5	-90
σ Scorpii	3.4	1.15	9.5	25 20.3	2 54.2	+11 36.9	+0.9095	0.5297	0.1357	+65	+ 9
25 Scorpii	7.0	1.08	9.1	25 20.1	14 58.5	- 0 42.4	-0.5821	0.5351	0.1104	- 5	-85
31 Ophiuchi	6.7	1.03	8.8	25 29.6	23 14.0	+ 7 16.6	-1.2410	0.5383	0.0918	-53	-81
B. A. C. 5800	7.5	1.01	8.2	26 51.5	6 3 33.3	+11 27.1	-0.1033	0.5403	0.0819	+16	-52
A Ophiuchi	4.9	+1.01	- 8.2	-26 26.8	4 5.9	+11 58.6	-0.6034	0.5403	-0.0806	-10	-88
B. A. C. 5813	6.8	1.01	8.3	26 23.6	4 30.0	-11 38.0	-0.6936	0.5406	0.0797	-14	-90
38 Ophiuchi	6.7	1.00	8.3	26 30.8	5 7.3	-11 2.0	-0.6106	0.5406	0.0782	-10	-90
43 Ophiuchi	5.8	0.99	7.7	28 2.4	7 40.6	- 8 33.9	+0.8853	0.5418	0.0721	+62	+ 8
3 Sagittarii *var.*	4.6	0.90	7.3	27 47.5	18 35.3	+ 1 58.4	-0.0313	0.5454	0.0456	+17	-46
B. A. C. 6127	5.1	+0.83	- 6.7	-28 28.2	7 3 43.2	+10 47.3	+0.4024	0.5474	-0.0228	+38	-20
B. A. C. 6194	5.1	0.78	6.9	27 4.9	8 10.3	- 8 55.0	-1.2040	0.5484	-0.0116	-55	-90
φ Sagittarii	3.7	0.66	6.3	27 6.1	20 21.0	+ 2 50.1	-1.1270	0.5498	+0.0197	-48	-90
τ Sagittarii	3.6	0.58	5.6	27 49.7	8 5 42.4	+11 51.7	-0.0310	0.5501	0.0439	+16	-46
B. A. C. 6628	5.9	0.50	5.1	28 4.4	13 25.6	- 4 41.3	+0.6485	0.5499	0.0636	+58	- 7
B. A. C. 6666	5.8	+0.48	- 5.2	-27 12.3	15 48.5	- 2 23.4	-0.1379	0.5496	+0.0697	+13	-52
ω Sagittarii	5.1	0.35	5.0	26 35.1	9 3 17.2	+ 8 41.1	+0.1534	0.5483	0.0984	+31	-35
b Sagittarii	4.6	0.35	4.6	27 27.3	3 46.2	+ 9 9.1	+1.1440	0.5482	0.0996	+63	+29
A Sagittarii	5.3	0.34	4.9	26 29.2	4 40.7	+10 1.7	+0.1876	0.5482	0.1017	+33	-33
B. A. C. 7077	6.4	0.19	4.6	25 18.4	19 50.4	+ 0 40.0	+0.7285	0.5450	0.1377	+65	- 3
B. A. C. 7237	6.9	+0.08	- 4.5	-24 11.1	10 4 56.4	+ 9 27.1	+0.8708	0.5428	+0.1581	+66	+ 5
χ Capricorni	5.4	-0.01	5.0	21 37.5	11 3.4	- 8 40.6	-0.8515	0.5411	0.1712	- 4	-90
φ Capricorni	5.5	0.05	5.0	21 5.8	14 17.7	- 5 32.5	-0.8445	0.5403	0.1780	- 3	-90
33 Capricorni	5.7	0.08	4.7	21 18.5	19 12.4	- 0 45.9	+0.2771	0.5391	0.1878	+47	-29
35 Capricorni	6.2	0.08	4.5	21 39.6	20 37.6	+ 0 36.4	+0.9170	0.5383	0.1904	+68	+ 8
37 Capricorni	6.0	-0.13	- 4.8	-20 33.8	11 0 8.8	+ 4 0.6	+0.4398	0.5376	+0.1972	+57	-21
38 Capricorni	6.9	0.13	4.7	20 43.7	0 10.7	+ 4 2.4	+0.6193	0.5374	0.1973	+66	-11
ε Capricorni	4.7	0.14	4.9	19 56.8	1 11.2	+ 5 0.8	-0.0053	0.5373	0.1988	+33	-44
κ Capricorni	5.0	0.17	5.0	19 21.3	3 46.3	+ 7 30.8	-0.1088	0.5364	0.2040	+29	-50
B. A. C. 7550	6.3	0.16	4.8	20 6.6	4 1.8	+ 7 45.8	+0.7389	0.5364	0.2045	+70	- 6
50 Aquarii	6.1	-0.38	- 5.3	-14 4.4	23 24.5	+ 2 30.2	-1.2870	0.5322	+0.2365	-39	-90
B. A. C. 7835	6.5	0.40	5.3	13 27.9	12 2 2.4	+ 5 2.9	-1.2880	0.5315	0.2403	-39	-88
56 Aquarii	6.3	0.39	4.9	15 8.1	2 9.3	- 5 9.5	+0.4722	0.5315	0.2406	+65	-19
74 Aquarii	6.0	0.51	5.2	12 11.2	13 11.4	- 8 9.8	+0.1580	0.5303	0.2552	+49	-36
75 Aquarii	7.0	0.50	5.0	12 45.6	13 29.4	- 7 52.4	+0.8241	0.5302	0.2555	+77	0
ψ¹ Aquarii	4.1	-0.60	- 5.1	- 9 40.3	23 52.3	+ 2 10.4	+0.3632	0.5294	+0.2667	+62	-25
χ Aquarii	5.3	0.62	5.4	8 18.7	13 0 21.5	+ 2 38.7	-0.8966	0.5295	0.2673	- 5	-90
ψ² Aquarii	4.2	0.61	5.0	9 46.1	0 51.2	+ 3 7.5	+0.7241	0.5295	0.2677	+79	- 6
ψ³ Aquarii	4.8	0.61	4.9	10 11.8	1 21.3	+ 3 36.5	+1.2960	0.5295	0.2681	+80	+34
24 Piscium	6.1	0.75	5.1	3 45.1	17 33.9	- 4 42.2	-0.8061	0.5304	0.2804	+ 1	-90
27 Piscium	5.1	-0.76	- 4.8	- 4 9.1	20 18.2	- 2 3.2	+0.3721	0.5311	+0.2821	+65	-25
29 Piscium	5.0	0.77	4.8	3 37.5	21 47.7	- 0 36.6	+0.2608	0.5311	0.2827	+58	-31
B. A. C. 8351	8.0	0.77	4.8	3 21.8	21 53.9	- 0 30.6	+0.0252	0.5314	0.2828	+45	-43
4 Ceti	6.0	0.78	4.7	3 8.8	14 0 35.8	+ 2 6.0	+0.5696	0.5319	0.2839	+78	-15
5 Ceti	6.0	0.78	4.7	3 2.7	0 49.1	+ 2 18.9	+0.5291	0.5319	0.2841	+75	-17
B. A. C. 5	5.7	-0.79	- 4.7	- 2 49.2	1 3.7	+ 2 33.0	+0.3729	0.5321	+0.2841	+65	-25

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
10 Ceti	6.2	−0.84	− 4.3	− 0 38.6	14 9 30.0	+10 42.8	+0.5900	0.5340	+0.2864	+80	−14
B. A. C. 237	6.7	0.93	3.9	+ 2 48.2	20 59.9	− 2 9.9	+0.4356	0.5380	0.2864	+69	−22
73 Piscium	5.9	0.96	3.4	5 4.9	15 3 13.8	+ 3 51.3	−0.0531	0.5406	0.2850	+41	−66
77 Piscium	5.9	0.95	3.4	4 20.2	3 40.0	+ 4 16.6	+0.8123	0.5409	0.2848	+90	− 1
ε Piscium	5.5	0.97	− 3.3	5 4.9	4 50.7	+ 5 24.9	+0.4077	0.5417	0.2844	+68	−22
				NEW	*MOON.*						
ρ^1 Arietis	7.0	−1.06	+ 1.6	+17 18.0	17 2 53.9	+ 1 49.7	+0.5157	0.5715	+0.2334	+77	−10
ρ^2 Arietis	6.0	1.07	1.6	17 53.9	3 15.3	+ 2 10.2	+0.0117	0.5715	0.2328	+45	−35
ρ^3 Arietis	6.0	1.07	1.7	17 35.8	3 30.1	+ 2 24.5	+0.3661	0.5722	0.2323	+76	−17
50 Arietis	6.8	1.06	1.8	17 34.8	5 10.9	+ 4 1.4	+0.7714	0.5728	0.2302	+90	+ 4
54 Arietis	6.3	−1.05	+ 2.2	+18 23.1	8 20.4	+ 7 3.7	+0.6913	0.5753	+0.2227	+90	+ 1
δ Arietis	4 0	1.05	2.5	19 19.3	9 38.5	+ 8 18.8	+0.0558	0.5768	0.2202	+47	− 6
ζ Arietis	4.7	1.06	2.5	20 38.9	10 52.7	+ 9 30.1	−0.9800	0.5773	0.2175	−11	−69
τ^1 Arietis	5.0	1.05	3.1	20 45.7	13 28.0	+11 59.6	−0.5353	0.5797	0.2117	+15	−62
τ^2 Arietis	5 3	1.04	3.1	20 21.5	14 4.9	−11 25.0	−0.0066	0.5797	0.2104	+43	−33
65 Arietis	6.0	−1.03	+ 3.2	+20 25.5	14 44.8	−10 46.8	+0.0657	0.5811	+0.2090	+48	−30
B. A. C. 1055	6.8	1.03	3.3	21 39.9	14 47.0	−10 44.7	−1.1480	0.5811	0.2088	−25	−68
B. A. C. 1170	6.3	0.99	4.7	23 5.6	18 0 4.8	− 1 49.0	−0.7166	0.5864	0.1865	+ 5	−67
26 Tauri	7.0	0.99	4.8	23 31.8	0 18.2	− 1 36.2	−1.1070	0.5866	0.1861	−23	−66
B. A. C. 1189	6.0	0.96	4.9	21 55.3	0 42.4	− 1 12.9	+0.5542	0.5873	0.1849	+81	− 2
32 Tauri	6.0	−0.95	+ 4.8	+22 10.3	3 23.0	+ 1 21.2	+0.7945	0.5892	+0.1780	+90	+11
33 Tauri	6.3	0.95	5.0	22 22.0	3 27.4	+ 1 25.4	+0.1217	0.5892	0.1780	+51	−24
B. A. C. 1238	6.3	0.95	5.1	22 54.1	4 56.6	+ 2 50.9	+0.3489	0.5899	0.1740	+65	−12
36 Tauri	6.0	0.94	5.5	23 48.7	6 14.2	+ 4 5.4	−0.3177	0.5906	0.1703	+26	−46
χ Tauri	5.7	0.89	6.5	25 22.7	13 7.7	+10 41.9	−0.7693	0.5944	0.1509	+ 1	−65
B. A. C. 1347	7.3	−0.86	+ 6.2	+24 9.5	13 29.7	+11 3.1	+0.4945	0.5950	+0.1498	+77	− 2
62 Tauri	6.0	0.86	6.2	24 3.2	13 41.2	+11 14.1	+0.6265	0.5953	0.1494	+89	+ 5
W. iv, 1421	6.0	0.67	8.6	27 53.8	19 6 37.7	+ 3 27.9	−1.0930	0.6015	0.0968	−25	−62
β Tauri	2.0	0.59	9.1	28 31.1	12 42.3	+ 9 17.0	−1.1870	0.6032	0.0768	−35	−61
136 Tauri	5.3	0.41	9.3	27 35.4	22 37.7	− 5 13.1	+0.3352	0.6032	+0.0434	+65	0
49 Aurigæ	5.7	−0.15	+ 9.8	+28 6.5	20 14 1.4	+ 9 31.2	+0.0840	0.6005	−0.0068	+49	−10
53 Aurigæ	6.0	0.11	10.1	29 4.7	15 11.0	+10 37.9	−0.9061	0.5999	0.0119	−10	−61
54 Aurigæ	6.0	0.10	9.8	28 21.6	15 37.9	+11 3.7	−0.1883	0.5995	0.0140	+33	−25
25 Geminorum	6.5	0.09	9.8	28 17.9	16 18.0	+11 42.1	−0.1362	0.5994	0.0161	+36	−22
28 Geminorum	6.0	−0.07	10.1	29 4.9	17 33.0	−11 6.1	−0.9491	0.5984	0.0204	−14	−61
W. vi, 1656	8.2	+0.06	+ 9.3	+26 59.8	21 0 43.9	− 4 13.2	+0.9290	0.5947	−0.0436	+90	+32
47 Geminorum	6.0	0.11	9.2	27 2.1	3 35.5	− 1 28.7	+0.7530	0.5932	0.0528	+90	+21
53 Geminorum	6.3	0.14	9.6	28 5.2	5 18.4	+ 0 9.9	−0.4081	0.5924	0.0591	+21	−41
59 Geminorum	6.9	0.20	9.4	27 50.9	8 35.7	+ 3 19.2	−0.3746	0.5896	0.0683	+23	−40
ι Geminorum	4.0	0.21	9.4	28 0.8	9 2.9	+ 3 45.3	−0.5751	0.5896	0.0697	+11	−52
b^1 Geminorum	5.3	+0.23	+ 9.5	+28 20.5	10 25.6	+ 5 4.6	−1.0080	0.5887	−0.0738	−18	−62
b^2 Geminorum	6.3	0.24	9.4	28 8.4	10 36.7	+ 5 15.2	−0.8166	0.5884	0.0745	− 4	−62
B. A. C. 2472	8.0	0.24	9.5	28 8.1	10 56.3	+ 5 34.1	−0.8354	0.5880	0.0754	− 5	−62
υ Geminorum	4.3	0.28	9.1	27 8.1	12 59.4	+ 7 32.2	+0.0255	0.5869	0.0816	+46	−20
c Geminorum	6.0	0.33	8.6	26 2.4	16 11.9	+10 36.9	+0.8636	0.5843	0.0911	+90	+24
φ Geminorum	5.0	+0.40	+ 8.8	+27 2.6	19 52.1	− 9 51.6	−0.5153	0.5815	−0.1015	+15	−51
ω^1 Cancri	6.0	0.45	8.1	25 41.2	22 50.2	− 7 0.6	+0.5606	0.5788	0.1099	+83	+ 5
ω^2 Cancri	6.3	0.44	8.0	25 23.1	23 9.8	− 6 41.7	+0.8343	0.5759	0.1108	+90	+20
ψ^1 Cancri	6.8	0.50	8.1	26 9.6	22 2 33.0	− 3 26.5	−0.3528	0.5753	0.1199	+24	−43
ψ^2 Cancri	5.7	0.51	7.9	25 50.0	2 39.3	− 3 20.4	−0.0291	0.5751	0.1202	+42	−26
λ Cancri	5.7	+0.56	+ 7.2	+24 21.6	6 46.0	+ 0 36.8	+0.9714	0.5716	−0.1308	+90	+27
υ^1 Cancri *mult.*	6.0	0.61	7.3	24 53.2	9 16.2	+ 3 1.3	+0.0945	0.5696	0.1372	+50	−22
υ^2 Cancri	5.8	0.62	7.0	24 30.1	10 4.8	+ 3 48.1	+0.3784	0.5685	0.1391	+68	− 7
υ^3 Cancri	6.0	0.63	6.9	24 26.6	11 16.8	+ 4 57.4	+0.2718	0.5675	0.1421	+60	−36
υ^4 Cancri	5.7	0.64	6.9	24 27.0	11 53.9	+ 5 33.1	+0.1756	0.5670	0.1435	+54	−18
ξ Cancri	5.0	+0.86	+ 4.8	+22 28.8	23 3 25.4	− 3 29.3	−0.2846	0.5524	−0.1776	+28	−46

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
79 Cancri	6.3	+0.86	+ 4.7	+22 25.9	**23** 3 51.5	− 3 4.2	−0.3108	0.5520	−0.1786	+27	−47
B. A. C. 3138	6.3	0.88	4.3	21 43.5	5 18.5	− 1 40.3	+0.1651	0.5509	0.1816	+53	−23
B. A. C. 3206	6.3	0.92	3.5	20 15.1	10 16.9	+ 3 7.7	+0.7769	0.5463	0.1907	+90	+ 8
η Leonis	3.3	1.13	+ 0.5	17 17.1	**24** 6 2.9	− 1 45.8	−0.1971	0.5284	0.2217	+33	−47
42 Leonis	6.0	1.18	− 0.6	15 30.9	13 5.5	+ 5 3.3	+0.0812	0.5230	0.2306	+48	−34
B. A. C. 3579	7.2	+1.20	− 1.1	+14 53.4	16 31.7	+ 8 23.1	−0.0566	0.5198	−0.2343	+41	−41
ι Leonis	5.7	1.22	1.3	14 41.2	18 12.3	+10 0.6	−0.2354	0.5206	0.2362	+32	−51
B. A. C. 3837	6.3	1.33	5.0	8 38.7	**25** 15 36.2	+ 6 46.0	+0.9574	0.5052	0.2538	+90	+ 9
B. A. C. 4039	7.5	1.45	8.1	4 4.6	**26** 15 15.7	+ 5 45.2	−0.2560	0.4960	0.2632	+31	−58
b Virginis	5.8	1.46	8.2	4 15.0	16 12.0	+ 6 39.8	−0.6908	0.4957	0.2633	+ 8	−86
10 Virginis	6.4	+1.47	− 9.0	+ 2 29.8	21 31.1	+11 50.1	−0.1952	0.4942	−0.2642	+34	−54
13 Virginis	6.1	1.48	9.7	− 0 11.8	**27** 2 26.9	− 7 22.3	+1.4270	0.4934	0.2642	+90	+52
η Virginis	4.0	1.48	9.8	0 4.5	3 8.1	− 6 42.2	+1.1110	0.4934	0.2643	+90	+17
SATURN				0 27.1	12 22.3	+ 2 16.9	−0.9152	0.4948	0.2645	− 4	−90
γ Virginis (*mean.*)	3.1	1.53	10.7	0 52.0	15 10.7	+ 5 0.5	−1.2030	0.4922	0.2631	−24	−90
38 Virginis	6.2	+1.54	−11.4	− 2 58.5	21 31.7	+11 11.2	−0.5718	0.4920	−0.2616	+15	−79
k Virginis	5.9	1.56	11.5	3 14.3	**28** 1 5.9	− 9 20.5	−1.2170	0.4919	0.2604	−25	−90
θ Virginis	4.7	1.58	12.1	4 58.3	6 46.7	− 3 49.0	−0.7939	0.4925	0.2581	+ 3	−90
h Virginis	5.8	1.60	13.1	9 37.0	19 25.0	+ 8 28.5	+1.0780	0.4943	0.2513	+80	+15
B. A. C. 4591	6.0	1.64	13.2	9 10.5	**29** 3 12.5	− 7 57.1	−1.3430	0.4962	0.2459	−41	−84
λ Virginis	5.0	+1.68	−13.7	−12 52.9	20 20.9	+ 8 42.4	−1.3510	0.5019	−0.2305	−46	−80
B. A. C. 4896	6.6	1.72	13.6	17 20.9	**30** 13 20.3	+ 1 12.3	−0.1624	0.5090	0.2104	+28	−53
10 Libræ	6.5	1.72	13.6	17 55.1	13 28.1	+ 1 20.0	+0.4411	0.5093	0.2102	+60	−20
ι^1 Libræ	5.0	+1.75	−13.4	−19 23.4	23 52.8	+11 26.1	−0.0425	0.5140	−0.1955	+32	−46
MAY.											
ι^2 Libræ	6.5	+1.75	−13.4	−19 14.8	**1** 0 26.5	+11 58.8	−0.3106	0.5145	−0.1946	+19	−62
B. A. C. 5254	5.8	1.80	12.4	23 39.7	20 32.0	+ 7 27.2	+1.0030	0.5247	0.1613	+66	+15
δ Scorpii	2.3	1.79	12.4	22 19.2	23 40.3	+10 29.4	−0.9828	0.5260	0.1553	−24	−90
19 Scorpii	5.1	1.80	11.7	23 54.9	**2** 9 22.6	− 4 6.7	−0.6279	0.5310	0.1363	− 5	−90
σ Scorpii	3.4	1.81	11.5	25 20.3	9 36.5	− 3 53.3	+0.9223	0.5311	0.1359	+65	+10
25 Scorpii	7.0	+1.79	−10.6	−25 20.2	21 40.5	+ 7 47.1	−0.5684	0.5385	−0.1104	− 4	−84
31 Ophiuchi	6.7	1.78	9.8	25 29.7	**3** 5 55.9	− 8 14.0	−1.2280	0.5396	0.0918	−51	−90
B. A. C. 5800	7.5	1.78	9.3	26 51.6	10 15.4	− 4 3.2	−0.0870	0.5413	0.0818	+17	−49
A Ophiuchi	4.9	1.77	9.3	26 26.9	10 48.1	− 3 31.7	−0.5884	0.5414	0.0807	− 8	−86
B. A. C. 5813	6.8	1.77	9.3	26 23.7	11 12.1	− 3 8.4	−0.6810	0.5417	0.0796	−14	−90
38 Ophiuchi	6.7	+1.77	− 9.2	−26 30.9	11 49.3	− 2 32.5	−0.5958	0.5419	−0.0781	−10	−87
43 Ophiuchi	5.8	1.78	8.7	28 2.4	14 22.9	− 0 4.1	+0.9028	0.5429	0.0721	+62	+10
3 Sagittarii *var.*	4.6	1.74	7.7	27 47.5	**4** 1 18.8	+10 29.4	−0.0185	0.5456	0.0454	+17	−45
B. A. C. 6127	5.1	1.71	6.6	28 28.2	10 28.6	− 4 40.8	+0.4243	0.5476	0.0227	+40	−20
B. A. C. 6194	5.1	1.65	6.6	27 4.9	14 56.6	− 0 21.1	−1.1870	0.5479	−0.0112	−54	−90
φ Sagittarii	3.7	+1.57	− 5.4	−27 6.1	**5** 3 12.4	+11 29.1	−1.1090	0.5488	+0.0200	−46	−90
τ Sagittarii	3.6	1.52	4.2	27 49.7	12 38.6	− 3 24.5	−0.0075	0.5483	0.0440	−10	−45
B. A. C. 6628	5.9	1.46	3.3	28 4.4	20 26.9	+ 4 7.6	+0.6825	0.5474	0.0635	+60	− 5
B. A. C. 6666	5.8	1.42	3.3	27 12.3	22 51.5	+ 6 27.1	−0.1096	0.5470	0.0695	+15	−50
ω Sagittarii	5.1	1.29	2.4	26 35.0	**6** 10 29.9	− 6 18.6	+0.1839	0.5444	0.0979	+33	−33
b Sagittarii	4.6	+1.30	− 2.1	−27 27.2	10 59.4	− 5 50.1	+1.1830	0.5444	+0.0990	+63	+34
A Sagittarii	5.3	1.28	2.3	26 29.1	11 55.2	− 4 56.1	+0.2183	0.5443	0.1012	+35	−32
B. A. C. 7077	6.4	1.12	1.2	25 18.3	**7** 3 20.7	+ 9 57.9	+0.7706	0.5399	0.1431	+65	0
B. A. C. 7237	6.9	0.99	0.7	24 11.0	12 38.4	− 5 3.2	+0.9160	0.5365	0.1629	+66	+ 9
χ Capricorni	5.4	0.88	1.0	21 37.4	19 54.9	+ 1 58.8	−0.6509	0.5342	0.1714	− 2	−90
27 Capricorni	6.5	+0.87	− 1.1	−20 59.2	20 22.9	+ 2 26.0	−1.2580	0.5338	+0.1728	+25	−90
φ Capricorni	5.5	0.83	0.9	21 5.8	23 14.0	+ 5 11.4	−0.6353	0.5332	0.1778	− 2	−92
33 Capricorni	5.7	0.79	0.5	21 18.4	**8** 3 14.6	+ 9 4.0	+0.3179	0.5322	0.1858	+50	−26
35 Capricorni	6.2	0.78	0.2	21 39.5	4 41.8	+10 28.4	+0.9651	0.5314	0.1882	+68	+11
37 Capricorni	6.0	0.73	0.3	20 33.7	8 8.8	−10 1.6	+0.4843	0.5306	0.1948	+59	−18
38 Capricorni	6.9	+0.74	− 0.2	−20 43.6	8 20.4	−10 0.1	+0.6659	0.5306	+0.1948	+68	− 8

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
ε Capricorni	4.7	+0.71	−0.4	−19 56.7	8 9 22.5	− 9 0.1	+0.0320	0.5299	+0.1966	+35	−42
κ Capricorni	5.0	0.68	0.3	19 21.2	12 1.7	− 6 26.0	−0.0693	0.5291	0.2013	+31	−48
B. A. C. 7550	6.3	0.68	0.2	20 6.5	12 17.6	− 6 10.6	+0.7861	0.5290	0.2018	+70	− 1
50 Aquarii	6.1	0.40	0.5	14 4.3	9 8 12.4	−10 54.0	−1.2630	0.5241	0.2330	−37	−90
B. A. C. 7835	6.5	0.37	−0.5	13 27.8	10 54.8	− 8 16.8	−1.2680	0.5234	0.2366	−37	−90
56 Aquarii	6.3	+0.37	+0.1	−15 8.0	11 2.1	− 8 9.8	+0.5183	0.5234	+0.2368	+67	−17
74 Aquarii	6.0	0.22	−0.3	12 11.1	22 23.0	+ 2 49.8	+0.1999	0.5217	0.2509	+51	−33
75 Aquarii	7.0	0.23	0.0	12 45.5	22 41.5	+ 3 7.5	+0.8740	0.5217	0.2514	+77	+ 2
ψ¹ Aquarii	4.1	0.09	0.2	9 40.2	10 9 21.9	−10 31.9	+0.4071	0.5216	0.2626	+65	−23
χ Aquarii	5.3	0.07	0.6	8 18.6	9 51.8	−10 2.9	−0.8692	0.5214	0.2629	− 4	−90
ψ² Aquarii	4.2	+0.08	−0.1	− 9 46.0	10 22.4	− 9 33.3	+0.7707	0.5216	+0.2634	+76	− 4
ψ³ Aquarii	4.8	+0.08	+0.1	10 11.7	10 53.3	− 9 3.4	+1.3500	0.5217	0.2640	+80	+40
24 Piscium	6.1	−0.13	−0.8	3 45.0	11 3 31.4	+ 7 3.4	−0.7769	0.5232	0.2764	+ 3	−90
27 Piscium	5.1	0.15	0.5	4 9.0	6 19.6	+ 9 46.3	+0.4083	0.5240	0.2779	+67	−23
29 Piscium	5.0	0.17	0.5	3 37.4	7 51.2	+11 15.0	+0.2940	0.5244	0.2787	+60	−29
B. A. C. 8351	8.0	−0.17	−0.6	− 3 21.7	7 57.6	+11 21.1	+0.0578	0.5244	+0.2787	+47	−41
4 Ceti	6.0	0.19	0.5	3 8.7	10 43.2	− 9 58.4	+0.6070	0.5250	0.2800	+82	−13
5 Ceti	6.0	0.21	0.5	3 2.6	10 56.8	− 9 45.1	+0.5679	0.5250	0.2800	+78	−15
B. A. C. 5	5.7	0.21	0.5	2 49.1	11 11.7	− 9 30.7	+0.4085	0.5250	0.2800	+67	−23
10 Ceti	6.2	0.29	0.4	− 0 38.5	19 48.8	− 1 10.2	+0.6255	0.5281	0.2828	+84	−12
B. A. C. 237	6.7	−0.42	−0.3	+ 2 48.3	12 7 31.1	+10 9.3	+0.4652	0.5334	+0.2833	+71	−20
73 Piscium	5.9	0.49	−0.3	5 5.0	13 50.6	− 7 43.7	−0.0300	0.5365	0.2822	+42	−45
77 Piscium	5.9	0.48	0.0	4 20.3	14 17.1	− 7 18.1	+0.8385	0.5367	0.2822	+90	0
ε Piscium	5.5	0.50	−0.2	5 5.0	15 28.6	− 6 9.0	+0.4296	0.5375	0.2818	+69	−21
ζ Piscium	4.8	0.54	0.4	7 0.6	17 54.9	− 3 47.5	−0.8069	0.5389	0.2809	+ 2	−70
88 Piscium	6.2	−0.53	−0.2	+ 6 25.7	18 22.5	− 3 20.8	−0.0982	0.5394	+0.2806	+39	−48
B. A. C. 410	6.0	0.57	−0.1	6 51.1	22 8.0	+ 0 16.9	+0.5311	0.5416	0.2790	+76	−16
54 Ceti	5.0	0.67	+0.4	10 30.8	13 10 37.3	−11 39.4	+0.3267	0.5511	0.2704	+62	−25
B. A. C. 609	6.0	0.70	0.5	11 46.5	14 21.6	− 8 3.0	+0.0856	0.5531	0.2668	+48	−36
29 Arietis	6.3	0.78	1.3	14 33.6	14 4 36.7	+ 5 41.1	+1.0210	0.5659	0.2489	+90	+17
				NEW	*MOON.*						
W. iv, 1421	6.0	−0.75	+7.2	+27 53.8	16 16 22.2	− 8 59.6	−1.1190	0.6115	+0.0977	−27	−62
49 Aurigæ	5.7	0.40	9.1	28 6.4	17 22 47.3	− 3 55.0	+0.0265	0.6112	−0.0093	+45	−13
53 Aurigæ	6.0	0.37	9.2	29 4.7	23 54.7	− 2 50.5	−0.9499	0.6108	0.0131	−14	−61
54 Aurigæ	6.0	0.36	9.2	28 21.6	18 0 20.7	− 2 26.6	−0.2433	0.6108	0.0147	+30	−28
25 Geminorum	6.5	0.35	9.2	28 17.9	0 59.4	− 1 48.6	−0.1921	0.6102	0.0169	+33	−26
28 Geminorum	6.0	−0.34	+9.4	+29 4.9	2 12.1	− 0 39.1	−0.9938	0.6098	−0.0212	−17	−61
W. vi, 1656	8.2	0 24	9.0	26 59.8	9 8.6	+ 5 59.3	+0.8509	0.6059	0.0451	+90	−27
47 Geminorum	6.0	0.19	9.0	27 2.1	11 54.4	+ 8 38.0	+0.6775	0.6042	0.0543	+90	−17
53 Geminorum	6.3	0.17	9.3	28 5.2	13 33.9	+10 13.2	−0.4666	0.6030	0.0597	+18	−45
59 Geminorum	6.9	0.12	9.2	27 50.9	16 44.7	−10 44.0	−0.4373	0.6005	0.0707	+19	−44
ι Geminorum	4.0	−0.11	+9.2	+28 0.7	17 11.0	−10 18.9	−0.6327	0.6008	−0.0714	+ 8	−57
b¹ Geminorum	5.3	0.09	9.3	28 20.4	18 31.0	− 9 2.2	−1.0590	0.5989	0.0757	−22	−62
b² Geminorum	6.3	0.09	9.3	28 8.3	18 41.8	− 8 51.9	−0.8706	0.5989	0.0764	− 7	−62
B. A. C. 2472	8.0	0.09	9.3	28 8.0	19 0.7	− 8 33.7	−0.8908	0.5989	0.0774	− 8	−62
υ Geminorum	4.3	−0.06	9.0	27 8.1	20 59.8	− 6 39.6	−0.0502	0.5975	0.0835	+41	−24
c Geminorum	6.0	0.00	+8.7	+26 2.4	19 0 6.1	− 3 41.1	+0.7776	0.5948	−0.0930	+90	+19
φ Geminorum	5.0	+0.06	8.8	27 2.6	3 39.1	− 0 16.8	−0.5829	0.5916	0.1038	+11	−56
ω¹ Cancri	6.0	0.10	8.4	25 41.2	6 31.7	+ 2 28.6	+0.4744	0.5883	0.1120	+75	0
ω² Cancri	6.3	0.10	8.3	25 23.1	6 50.6	+ 2 46.8	+0.7439	0.5883	0.1129	+90	+15
ψ¹ Cancri	6.8	0.15	8.4	26 9.6	10 7.5	+ 5 55.7	−0.4250	0.5856	0.1223	+20	−48
ψ² Cancri	5.7	+0.15	+8.3	+25 50.0	10 13.5	+ 6 1.5	−0.1063	0.5853	−0.1225	+38	−30
λ Cancri	5.0	0.21	7.7	24 21.6	14 12.7	+ 9 51.2	+0.8762	0.5813	0.1334	+90	+21
υ¹ Cancri *mult.*	6.0	0.25	7.8	24 53.2	16 38.4	−11 48.8	+0.0118	0.5782	0.1397	+45	−26
υ² Cancri	5.8	0.26	7.6	24 30.1	17 25.5	−11 3.5	+0.2930	0.5772	0.1417	+62	−12
υ³ Cancri	6.0	0.28	7.5	24 26.6	18 35.5	− 9 56.3	+0.1848	0.5763	0.1446	+55	−18
υ⁴ Cancri	5.7	+0.28	+7.4	+24 27.0	19 11.5	− 9 21.7	+0.1085	0.5759	−0.1462	+50	−22

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x′*	*y′*	N.	S.
		s	″	° ′	d h m	h m				°	°
ξ Cancri	5.0	+0.50	+ 5.9	+22 28.8	**20** 10 17.2	+ 5 10.0	-0.3682	0.5601	-0.1803	+24	-50
79 Cancri	6.3	0.50	5.9	22 25.9	10 42.7	+ 5 34.6	-0.3959	0.5591	0.1812	+23	-52
B. A. C. 3138	6.3	0.52	5.6	21 43.5	12 7.4	+ 6 56.2	+0.0720	0.5580	0.1841	+48	-28
B. A. C. 3206	6.3	0.57	4.8	20 15.1	16 58.6	+11 37.0	+0.6759	0.5373	0.1933	+90	+ 2
η Leonis	3.3	0.80	2.2	17 17.1	**21** 12 19.6	+ 6 18.4	-0.2892	0.5331	0.2237	+29	-52
42 Leonis	6.0	+0.87	+ 1.1	+15 30.9	19 15.2	-10 59.5	-0.0175	0.5266	-0.2321	+43	-39
B. A. C. 3579	7.2	0.90	0.7	14 53.4	22 38.2	- 7 42.9	-0.1508	0.5232	0.2368	+36	-46
i Leonis	5.7	0.91	+ 0.5	14 41.2	**22** 0 17.5	- 6 6.8	-0.3298	0.5224	0.2375	+27	-56
B. A. C. 3837	6.3	1.07	- 3.4	8 38.3	21 27.3	- 9 35.5	+0.8525	0.5064	0.2545	+90	+ 3
B. A. C. 4039	7.5	1.25	6.7	4 4.6	**23** 21 0.1	-10 43.0	-0.3451	0.4956	0.2624	+26	-63
b Virginis	5.8	+1.27	- 6.7	+ 4 15.0	21 56.2	- 9 48.5	-0.7785	0.4951	-0.2625	+ 4	-81
13 Virginis	6.1	1.32	8.7	- 0 11.7	**24** 8 10.8	+ 0 9.0	+1.3370	0.4923	0.2631	+90	+37
η Virginis	4.0	1.33	8.6	0 4.4	8 51.8	+ 0 48.9	+1.0240	0.4921	0.2632	+90	+11
SATURN				0 4.0	15 40.2	+ 7 26.0	-0.7720	0.4919	0.2636	+ 4	-90
γ Virginis (*mean.*)	3.1	1.43	9.5	0 52.0	20 55.6	-11 26.9	-1.2800	0.4905	0.2616	-31	-90
38 Virginis	6.2	+1.47	-10.5	- 2 58.5	**25** 3 17.8	- 5 15.3	-0.6443	0.4900	-0.2599	+11	-86
k Virginis	5.9	1.50	10.7	3 14.3	6 52.6	- 1 46.4	-1.2860	0.4903	0.2587	-32	-90
θ Virginis	4.7	1.54	11.3	4 58.3	12 34.8	+ 3 46.5	-0.8598	0.4906	0.2563	- 2	-90
h Virginis	5.8	1.62	13.0	9 37.0	**26** 1 16.4	- 7 52.7	+1.0240	0.4923	0.2494	+80	+12
λ Virginis	5.0	1.79	14.0	12 52.9	**27** 2 19.3	- 7 31.7	-1.3840	0.4999	0.2287	-54	-90
B. A. C. 4896	6.6	+1.92	-14.5	-17 20.9	19 22.6	+ 9 2.1	-0.1774	0.5081	-0.2087	+27	-54
10 Libræ	6.5	1.92	14.6	17 55.1	19 30.6	+ 9 9.9	+0.4270	0.5081	0.2086	+59	-21
ι¹ Libræ	5.0	2.00	14.5	19 23.4	**28** 5 57.1	- 4 42.3	-0.0396	0.5134	0.1943	+32	-46
ι² Libræ	6.5	2.01	14.5	19 14.8	6 30.8	- 4 9.5	-0.3127	0.5139	0.1934	+18	-62
B. A. C. 5254	5.8	2.17	13.8	23 39.7	**29** 2 38.2	- 8 39.2	+1.0240	0.5248	0.1601	+66	+17
δ Scorpii	2.3	+2.17	-13.5	-22 19.2	5 46.5	- 5 36.8	-0.9616	0.5265	-0.1542	-22	-90
19 Scorpii	5.1	2.23	12.7	23 54.9	15 28.9	+ 3 47.0	-0.6135	0.5316	0.1355	- 4	-88
σ Scorpii	3.4	2.25	12.7	25 20.3	15 42.8	+ 4 0.5	+0.9561	0.5319	0.1349	+65	+12
25 Scorpii	7.0	2.31	11.6	25 20.2	**30** 3 46.2	- 8 19.8	-0.5207	0.5378	0.1095	- 2	-79
B. A. C. 5800	7.5	2.37	10.3	26 51.6	16 20.0	+ 3 48.8	-0.0278	0.5428	0.0809	+19	-46
A Ophiuchi	4.9	+2.36	-10.2	-26 26.9	16 52.7	+ 4 20.4	-0.5295	0.5431	-0.0796	- 5	-80
B. A. C. 5813	6.8	2.37	10.2	26 23.7	17 16.6	+ 4 43.6	-0.6210	0.5431	0.0787	-10	-90
38 Ophiuchi	6.7	2.37	10.1	26 30.9	17 53.8	+ 5 19.5	-0.5331	0.5434	0.0772	- 6	-81
43 Ophiuchi	5.8	2.40	9.8	28 2.5	20 27.1	+ 7 47.6	+0.9681	0.5444	0.0711	+62	+14
3 Sagittarii *var.*	6.4	2.42	8.3	27 47.5	**31** 7 21.8	- 5 40.1	+0.0629	0.5474	0.0446	+22	-40
B. A. C. 6127	5.1	+2.41	- 7.1	-28 28.2	16 30.7	+ 3 9.8	+0.5098	0.5494	-0.0216	+45	-15
B. A. C. 6194	5.1	+2.40	- 6.6	-27 4.9	20 58.7	+ 7 28.4	-1.0980	0.5499	-0.0102	-47	-90
JUNE.											
φ Sagittarii	3.7	+2.36	- 4.9	-27 6.1	**1** 9 13.6	- 4 42.3	-1.0070	0.5504	+0.0210	-39	-90
τ Sagittarii	3.6	+2.35	- 3.4	-27 49.7	18 40.0	+ 4 24.4	+0.1066	0.5495	+0.0450	+24	-38
B. A. C. 6628	5.9	2.31	2.2	28 4.3	**2** 2 29.0	+11 57.2	+0.8035	0.5484	0.0648	+62	+ 3
B. A. C. 6666	5.8	2.28	2.0	27 12.2	5 9.6	- 9 27.8	+0.0183	0.5478	0.0711	+21	-43
ω Sagittarii	5.1	2.19	0.4	26 35.0	16 34.4	+ 1 33.4	+0.3199	0.5446	0.0987	+40	-26
A Sagittarii	5.3	2.17	- 0.2	26 29.1	18 0.2	+ 2 56.3	+0.3545	0.5430	0.1021	+42	-24
B. A. C. 7077	6.4	+2.02	+ 1.7	-25 18.3	**3** 9 32.4	- 6 3.0	+0.9234	0.5387	+0.1371	+65	+10
B. A. C. 7237	6.9	1.92	2.7	24 11.0	18 55.4	+ 3 1.3	+1.0770	0.5350	0.1567	+66	+21
χ Capricorni	5.4	1.80	2.9	21 37.3	**4** 2 17.2	+10 8.6	-0.4949	0.5322	0.1712	+ 6	-76
27 Capricorni	6.5	1.78	2.8	20 59.1	2 45.6	+10 36.1	-1.1040	0.5318	0.1721	-30	-90
φ Capricorni	5.5	1.75	3.1	21 5.7	5 39.1	-10 36.0	-0.4778	0.5304	0.1774	+ 8	-74
33 Capricorni	5.7	+1.71	+ 3.7	-21 18.3	9 43.1	- 6 40.0	+0.4843	0.5286	+0.1849	+59	-18
35 Capricorni	6.2	1.70	4.0	21 39.4	11 11.6	- 5 14.3	+1.1390	0.5284	0.1875	+68	+24
37 Capricorni	6.0	1.65	4.0	20 33.6	14 52.0	- 1 40.9	+0.6555	0.5267	0.1940	+68	- 8
38 Capricorni	6.9	1.65	4.1	20 43.5	14 53.8	- 1 39.2	+0.8407	0.5265	0.1940	+69	+ 2
ε Capricorni	4.7	1.62	3.9	19 56.6	15 56.9	- 0 38.1	+0.2029	0.5250	0.1959	+44	-32
κ Capricorni	5.0	+1.58	+ 4.1	-19 21.1	18 38.8	+ 1 58.6	+0.1004	0.5250	+0.2003	+40	-39

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
B. A. C. 7550	6.3	+1.59	+4.3	−20 6.4	4 18 55.0	+ 2 14.3	+0.9661	0.5250	+0.2007	+70	+10
50 Aquarii	6.1	1.29	4.5	14 4.2	5 15 14.1	− 2 4.7	−1.0980	0.5183	0.2308	−22	−90
B. A. C. 7835	6.5	1.25	4.6	13 27.7	18 0.4	+ 0 36.4	−1.1000	0.5177	0.2344	−22	−90
56 Aquarii	6.3	1.28	5.1	15 7.9	18 7.9	+ 0 43.6	+0.7034	0.5177	0.2344	+75	− 7
74 Aquarii	6.0	1.10	5.2	12 11.0	6 5 45.9	−11 59.6	+0.3838	0.5154	0.2479	+61	−24
75 Aquarii	7.0	+1.10	+5.5	−12 45.4	6 4.8	−11 41.4	+1.0680	0.5151	+0.2481	+77	+15
ψ^1 Aquarii	4.1	0.95	5.3	9 40.1	17 3.0	− 1 3.2	+0.5946	0.5142	0.2587	+77	−13
χ Aquarii	5.3	0.93	4.9	8 18.5	17 33.8	− 0 33.3	−0.6994	0.5142	0.2591	+ 6	−90
ψ^3 Aquarii	4.2	0.94	5.4	9 45.9	18 5.2	− 0 2.8	+0.9629	0.5139	0.2595	+80	+ 8
24 Piscium	6.1	0.68	4.6	3 44.9	7 11 45.1	− 6 55.1	−0.6155	0.5151	0.2716	+12	−83
27 Piscium	5.1	+0.65	+4.9	− 4 8.9	14 38.6	− 4 6.9	+0.5867	0.5157	+0.2730	+79	−14
B. A. C. 8351	8.0	0.63	4.8	3 21.6	16 19.6	− 2 29.0	+0.2310	0.5158	0.2737	+56	−32
4 Ceti	6.0	0.59	5.0	3 8.6	19 10.4	+ 0 16.5	+0.7863	0.5162	0.2748	+76	− 3
5 Ceti	6.0	0.59	5.0	3 2.5	19 24.4	+ 0 30.2	+0.7465	0.5165	0.2749	+83	− 6
B. A. C. 5	5.7	0.59	4.9	2 49.0	19 39.8	+ 0 45.1	+0.5848	0.5167	0.2749	+80	−14
10 Ceti	6.2	+0.49	+4.9	− 0 38.4	8 4 33.3	+ 9 22.1	+0.7971	0.5194	+0.2773	+73	− 3
B. A. C. 237	6.7	0.32	4.1	+ 2 48.4	16 37.6	− 2 56.3	+0.6212	0.5246	0.2776	+83	−12
73 Piscium	5.9	0.25	4.3	5 5.1	23 8.7	+ 3 22.4	+0.1116	0.5278	0.2768	+50	−38
77 Piscium	5.9	0.26	4.6	4 20.4	23 36.0	+ 3 48.8	+0.9938	0.5283	0.2765	+90	+10
ε Piscium	5.5	0.23	4.3	5 5.1	9 0 49.7	+ 5 0.1	+0.5777	0.5289	0.2763	+80	−14
ζ Piscium	4.8	+0.19	+4.0	+ 7 0.7	3 20.3	+ 7 25.9	−0.6797	0.5302	+0.2754	+ 9	−82
88 Piscium	6.2	0.20	4.2	6 25.8	3 48.8	+ 7 53.5	+0.0388	0.5309	0.2752	+46	−41
B. A. C. 410	6.0	0.15	4.3	6 51.2	7 40.9	+11 38.0	+0.6711	0.5336	0.2735	+88	− 8
54 Ceti	5.5	+0.01	4.1	10 30.9	20 30.8	+ 0 2.1	+0.4475	0.5434	0.2653	+70	−18
B. A. C. 609	6.0	−0.03	4.0	11 46.6	10 0 20.8	+ 3 44.3	+0.1950	0.5461	0.2618	+55	−30
29 Arietis	6.3	−0.17	+4.3	+14 33.7	14 55.3	− 6 12.2	+1.1150	0.5598	+0.2445	+90	+24
36 Arietis	6.5	0.23	4.1	17 18.8	19 42.5	− 1 35.5	−0.4607	0.5646	0.2374	− 7	−73
40 Arietis	6.3	0.25	4.1	17 50.4	21 27.8	+ 0 5.9	−0.5675	0.5668	0.2346	+14	−67
π Arietis	5.7	0.24	4.2	17 1.2	21 47.3	+ 0 24.7	+0.3202	0.5669	0.2340	+62	−20
ρ^1 Arietis	7.0	0.26	4.4	17 18.1	11 0 6.9	+ 2 39.1	+0.5801	0.5686	0.2300	+82	− 6
ρ^2 Arietis	6.0	−0.27	+4.3	+17 54.0	0 28.5	+ 2 59.8	+0.0709	0.5695	+0.2294	+48	−32
ρ^3 Arietis	6.0	0.27	4.4	17 35.9	0 43.4	+ 3 14.2	+0.4284	0.5698	0.2291	+70	−14
50 Arietis	6.8	0.28	4.4	17 34.9	2 24.9	+ 4 51.8	+0.8281	0.5716	0.2259	+90	+ 8
54 Arietis	6.3	0.29	4.5	18 23.2	5 35.3	+ 7 55.0	+0.7401	0.5747	0.2200	+90	+ 4
δ Arietis	4.0	0.32	4.5	19 19.4	6 53.6	+ 9 10.3	+0.1003	0.5758	0.2175	+50	−29
ζ Arietis	4.7	−0.34	+4.3	+20 39.0	8 7.9	+10 21.7	−0.9397	0.5766	+0.2149	− 9	−69
τ^1 Arietis	5.0	0.35	4.5	20 45.8	10 48.3	−11 3.9	−0.5011	0.5798	0.2095	+17	−60
τ^2 Arietis	5.3	0.35	4.6	20 21.5	11 20.2	−10 33.5	+0.0263	0.5798	0.2083	+45	−32
65 Arietis	6.0	0.36	4.6	20 25.5	12 0.0	− 9 55.3	+0.0985	0.5800	0.2068	+48	−28
B. A. C. 1055	6.8	0.37	4.5	21 39.9	12 2.2	− 9 53.2	−1.1140	0.5808	0.1868	−22	−68
B. A. C. 1170	6.3	−0.42	+4.9	+23 5.6	21 16.6	− 1 0.9	−0.7037	0.5899	+0.1851	+ 5	−67
26 Tauri	7.0	0.42	4.9	23 31.8	21 29.9	− 0 48.1	−1.0920	0.5903	0.1845	−22	−66
B. A. C. 1189	6.0	0.41	5.2	21 55.3	21 53.8	− 0 25.2	+0.5613	0.5906	+0.1836	+82	− 3
				NEW	*MOON.*						
47 Geminorum	6.0	−0.20	+8.3	+27 2.0	14 22 3.3	− 3 25.0	+0.5701	0.6120	−0.0565	+85	+19
53 Geminorum	6.3	0.19	8.4	28 5.1	23 40.5	− 1 52.0	−0.5630	0.6109	0.0620	+12	−51
59 Geminorum	6.9	0.16	8.4	27 50.8	15 2 47.0	+ 1 6.4	−0.5383	0.6089	0.0726	+13	−50
ι Geminorum	4.0	0.15	8.5	28 0.7	3 12.7	+ 1 30.9	−0.7328	0.6087	0.0740	+ 2	−61
b^1 Geminorum	5.3	0.14	8.5	28 20.4	4 30.9	+ 2 45.7	−1.1580	0.6075	0.0783	−32	−62
b^2 Geminorum	6.3	−0.14	+8.5	+28 8.3	4 41.3	+ 2 55.7	−0.9734	0.6074	−0.0788	−15	−62
B. A. C. 2472	8.0	0.14	8.5	28 8.0	4 59.8	+ 3 13.4	−0.9914	0.6073	0.0798	−16	−62
υ Geminorum	4.3	0.12	8.3	27 8.1	6 56.1	+ 5 4.7	−0.1638	0.6059	0.0862	+35	−32
c Geminorum	6.0	0.08	8.0	26 2.4	9 57.7	+ 7 58.5	+0.6482	0.6039	0.0957	+90	+11
φ Geminorum	5.0	0.05	8.2	27 2.6	13 25.4	+11 17.4	−0.7020	0.6001	0.1067	+ 4	−62
ω^1 Cancri	6.0	−0.01	+7.9	+25 41.2	16 13.5	−10 1.5	+0.3390	0.5981	−0.1152	+65	− 7

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
ω^2 Cancri	6.3	−0.01	+ 7.9	+25 23.1	15 16 31.9	− 9 43.8	+0.6050	0.5971	−0.1161	+88	+ 7
ψ^1 Cancri	6.8	+0.03	7.9	26 9.6	19 43.5	− 6 40.3	−0.5560	0.5943	0.1255	+13	−56
ψ^2 Cancri	5.7	0.03	7.8	25 50.0	19 49.4	− 6 34.5	−0.2414	0.5955	0.1259	+30	−37
λ Cancri	5.7	0.07	7.4	24 21.6	23 42.1	− 2 51.4	+0.7241	0.5903	0.1369	+90	+11
υ^1 Cancri *mult.*	6.0	0.10	7.5	24 53.2	16 2 3.8	− 0 35.4	−0.1333	0.5882	0.1432	+36	−34
υ^2 Cancri	5.8	+0.11	+ 7.4	+24 30.1	2 49.7	+ 0 8.6	+0.1404	0.5872	−0.1453	+52	−19
υ^3 Cancri	6.0	0.12	7.3	24 26.6	3 57.6	+ 1 13.8	+0.0335	0.5860	0.1482	+46	−25
υ^4 Cancri	5.7	0.14	7.4	24 27.0	4 32.6	+ 1 47.4	−0.0586	0.5849	0.1503	+41	−30
ξ Cancri	5.0	0.28	6.2	22 28.8	19 12.4	− 8 6.9	−0.5335	0.5696	0.1844	+15	−60
79 Cancri	6.3	0.29	6.1	22 25.9	19 37.0	− 7 43.2	−0.5607	0.5680	0.1852	+14	−62
B. A. C. 3138	6.3	+0.31	+ 6.0	+21 43.5	20 59.3	− 6 24.0	−0.1014	0.5671	−0.1881	+38	−37
B. A. C. 3206	6.3	0.34	5.3	20 15.1	17 1 42.0	− 1 51.7	+0.4866	0.5614	0.1975	+75	− 8
η Leonis	3.3	0.54	3.2	17 17.2	20 29.7	− 7 43.7	−0.4911	0.5405	0.2279	+18	−63
42 Leonis	6.0	0.60	2.3	15 30.9	18 3 13.6	− 1 13.3	−0.2260	0.5347	0.2362	+32	−50
B. A. C. 3579	7.2	0.63	1.8	14 53.4	6 31.1	+ 1 57.7	−0.3614	0.5307	0.2398	+25	−58
i Leonis	5.7	+0.64	+ 1.7	+14 41.2	8 7.7	+ 3 31.2	−0.5384	0.5298	−0.2415	+16	−69
l Leonis	5.3	0.71	− 0.1	11 6.7	16 23.8	+11 31.5	+1.1600	0.5219	0.2490	+90	+35
B. A. C. 3837	6.3	0.82	1.7	8 38.8	19 4 46.1	− 0 29.0	+0.6160	0.5123	0.2571	+83	−10
B. A. C. 4039	7.5	1.02	4.6	4 4.6	20 3 50.7	− 2 4.6	−0.5716	0.4996	0.2644	+15	−78
b Virginis	5.8	1.00	5.4	4 15.0	4 45.8	− 1 11.4	−1.0010	0.4991	0.2644	−10	−86
10 Virginis	6.4	+1.06	− 5.8	+ 2 29.8	9 59.5	+ 3 53.5	−0.5091	0.4969	−0.2643	+18	−74
13 Virginis	6.1	1.09	7.0	− 0 11.7	14 50.7	+ 8 36.5	+1.0960	0.4955	0.2643	+90	+16
η Virginis	4.0	1.10	7.1	0 4.4	15 31.3	+ 9 16.0	+0.7866	0.4951	0.2643	+77	− 3
SATURN				0 9.9	22 8.4	− 8 18.0	−0.8596	0.4927	0.2629	− 1	−90
38 Virginis	6.2	1.26	9.1	2 58.5	21 9 43.7	+ 2 58.1	−0.8608	0.4920	0.2600	− 1	−90
θ Virginis	4.7	+1.35	−10.2	− 4 58.3	18 55.7	+11 54.9	−1.0680	0.4916	−0.2561	−15	−90
h Virginis	5.8	1.57	11.5	9 37.0	22 7 32.2	+ 0 10.5	+0.8212	0.4929	0.2485	+80	− 1
10 Libræ	6.5	1.89	14.7	17 55.1	24 1 39.8	− 6 53.4	+0.2860	0.5070	0.2068	+51	−28
ι^1 Libræ	5.0	2.02	14.8	19 23.4	12 6.2	+ 3 14.4	−0.1682	0.5122	0.1922	+26	−54
ι^2 Libræ	6.5	2.02	14.6	19 14.8	12 39.7	+ 3 47.1	−0.4352	0.5158	0.1913	+12	−70
B. A. C. 5254	5.8	+2.28	−14.6	−23 39.7	25 8 47.4	− 0 42.5	+0.9367	0.5240	−0.1581	+66	+10
δ Scorpii	2.3	2.30	14.0	22 19.2	11 55.6	+ 2 19.8	−1.0390	0.5258	0.1524	−28	−90
19 Scorpii	5.1	2.40	13.6	23 54.9	21 37.8	+11 43.4	−0.6555	0.5313	0.1336	− 7	−90
σ Scorpii	3.4	2.42	13.8	25 20.3	21 51.9	+11 57.1	+0.8944	0.5314	0.1331	+65	+ 8
25 Scorpii	7.0	2.56	12.5	25 20.2	26 9 54.4	− 0 24.3	−0.5590	0.5375	0.1077	− 4	−83
31 Ophiuchi	6.7	+2.63	−11.7	−25 29.7	18 8.4	+ 7 33.5	−1.1930	0.5414	−0.0892	−48	−88
B. A. C. 5900	7.5	2.69	11.3	26 51.6	22 26.9	+11 43.2	−0.0407	0.5437	0.0792	+19	−46
A Ophiuchi	4.9	2.69	11.1	26 26.9	22 59.5	−11 45.3	−0.5400	0.5437	0.0778	− 6	−82
B. A. C. 5813	6.8	2.69	11.1	26 23.7	23 23.4	−11 22.2	−0.6305	0.5439	0.0769	−11	−90
38 Ophiuchi	6.7	2.70	11.0	26 30.9	27 0 0.4	−10 46.5	−0.5455	0.5441	0.0754	− 7	−82
43 Ophiuchi	5.8	+2.75	−10.9	−28 2.5	2 33.4	− 8 18.7	+0.9651	0.5453	−0.0693	+62	+15
3 Sagittarii *var.*	4.6	2.83	9.2	27 47.6	13 26.2	+ 2 13.7	+0.0756	0.5488	0.0427	+22	−39
B. A. C. 6127	5.1	2.89	7.8	28 28.2	22 33.2	+10 59.7	+0.5403	0.5508	0.0197	+47	−13
B. A. C. 6194	5.1	2.89	7.1	27 4.9	28 3 0.2	− 8 42.6	−1.0580	0.5514	−0.0085	−44	−90
φ Sagittarii	3.7	2.93	5.0	27 6.1	15 11.8	+ 3 3.4	−0.9423	0.5522	+0.0230	−35	−90
τ Sagittarii	3.6	+2.95	− 3.4	−27 49.7	29 0 35.5	−11 52.7	+0.1873	0.5531	+0.0472	+28	−33
B. A. C. 6628	5.9	2.96	2.0	28 4.3	8 22.2	− 4 22.2	+0.8976	0.5507	0.0667	+62	+ 9
B. A. C. 6666	5.8	2.93	− 1.6	27 12.2	10 46.5	− 2 3.0	+0.1098	0.5503	0.0727	+26	−38
ω Sagittarii	5.1	2.90	+ 0.6	26 35.0	22 24.0	+ 9 10.4	+0.4399	0.5470	0.1009	+47	−19
A Sagittarii	5.3	2.89	0.8	26 29.1	23 49.0	+10 32.5	+0.4782	0.5468	0.1043	+49	−17
B. A. C. 7077	6.4	+2.81	+ 3.4	−25 18.2	30 15 17.4	+ 1 29.4	+1.0750	0.5412	+0.1393	+65	+22
JULY.											
B. A. C. 7237	6.9	+2.71	+ 4.9	−24 10.9	1 0 38.8	+10 32.1	+1.2470	0.5370	+0.1592	+66	+38
χ Capricorni	5.4	2.60	5.6	21 37.3	7 59.8	− 6 21.4	−0.3036	0.5337	0.1731	+16	−62
27 Capricorni	6.5	+2.58	+ 5.7	−20 59.1	8 28.1	− 5 54.0	−0.9160	0.5331	+0.1742	−18	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
φ Capricorni	5.5	+2.57	+ 6.1	-21 5.7	1 11 21.4	- 3 6.3	-0.2888	0.5325	+0.1791	+17	-61
33 Capricorni	5.7	2.55	6.6	21 18.2	15 25.3	+ 0 49.6	+0.6795	0.5299	0.1869	+68	- 7
35 Capricorni	6.2	2.55	7.0	21 39.3	16 53.9	+ 2 15.4	+1.3310	0.5294	0.1895	+68	+50
37 Capricorni	6.0	2.49	7.3	20 33.5	20 34.4	+ 5 48.9	+0.8600	0.5278	0.1959	+69	+ 4
38 Capricorni	6.9	2.49	7.3	20 43.4	20 36.2	+ 5 50.6	+1.0450	0.5276	0.1961	+69	+16
ε Capricorni	4.7	+2.47	+ 7.5	-19 56.5	21 39.4	+ 6 51.8	+0.4065	0.5273	+0.1978	+56	-22
κ Capricorni	5.0	2.44	7.7	19 21.0	2 0 21.4	+ 9 28.6	+0.3073	0.5264	0.2016	+51	-27
B. A. C. 7550	6.3	2.45	7.9	20 6.3	0 37.6	+ 9 44.4	+1.1770	0.5260	0.2028	+70	+27
50 Aquarii	6.1	2.16	9.2	14 4.1	21 1.7	+ 5 30.3	-0.8646	0.5178	0.2316	- 7	-90
B. A. C. 7835	6.5	2.13	9.2	13 27.6	23 49.1	+ 8 12.5	-0.8652	0.5176	0.2350	- 6	-90
56 Aquarii	6.3	+2.15	+ 9.6	-15 7.8	23 56.7	+ 8 19.9	+1.1270	0.5166	+0.2352	+75	+ 8
70 Aquarii	6.2	2.00	9.7	11 7.0	3 9 10.0	- 6 43.6	-1.1120	0.5142	0.2454	-21	-90
74 Aquarii	6.0	1.98	10.2	12 10.9	11 40.9	- 4 17.2	+0.6412	0.5136	0.2478	+76	-11
75 Aquarii	7.0	1.99	10.4	12 45.3	12 0.1	- 3 58.7	+1.3280	0.5133	0.2480	+77	+39
ψ^1 Aquarii	4.1	1.84	10.7	9 40.0	23 6.2	+ 6 47.5	+0.8618	0.5114	0.2580	+80	+ 2
χ Aquarii	5.3	+1.81	+10.3	- 8 18.4	23 37.3	+ 7 17.7	-0.4404	0.5112	+0.2583	+20	-70
ψ^2 Aquarii	4.2	1.82	10.8	9 45.8	4 0 9.2	+ 7 48.6	+1.2330	0.5111	0.2587	+80	+28
24 Piscium	6.1	1.57	10.4	3 44.8	18 6.9	+ 1 14.2	-0.3474	0.5105	0.2695	+26	-64
27 Piscium	5.1	1.54	10.7	4 8.8	21 3.8	+ 4 5.8	+0.8666	0.5107	0.2706	+86	+ 1
29 Piscium	5.0	1.52	10.7	3 37.2	22 40.2	+ 5 39.3	+0.7508	0.5110	0.2712	+82	- 5
B. A. C. 8351	8.0	+1.52	+10.6	- 3 21.5	22 46.9	+ 5 45.7	+0.5069	0.5110	+0.2712	+74	-18
4 Ceti	6.0	1.49	10.8	3 8.5	5 1 41.3	+ 8 34.9	+1.0720	0.5112	0.2722	+87	+14
5 Ceti	6.0	1.48	10.8	3 2.4	1 55.6	+ 8 48.9	+1.0300	0.5112	0.2722	+87	+11
B. A. C. 5	5.7	1.48	10.7	- 2 48.9	2 11.3	+ 9 4.1	+0.8662	0.5112	0.2724	+87	+ 1
44 Piscium	5.9	1.36	9.9	+ 1 21.0	10 39.8	- 6 42.7	-1.1530	0.5133	0.2739	-20	-90
10 Ceti	6.2	+1.38	+10.6	- 0 38.3	11 26.9	- 6 6.7	+1.0810	0.5133	+0.2740	+89	+15
B. A. C. 237	6.7	1.20	9.5	+ 2 48.4	23 39.5	+ 5 53.2	+0.8997	0.5187	0.2736	+90	+ 4
B. A. C. 274	6.2	1.15	9.3	5 54.5	6 3 51.7	+ 9 57.6	-0.1148	0.5194	0.2729	-20	-84
73 Piscium	5.9	1.12	9.7	5 5.1	6 21.3	-11 37.4	+0.3787	0.5204	0.2722	+65	-21
ε Piscium	5.5	1.10	9.7	5 5.1	8 5.1	- 9 46.9	+0.8494	0.5214	0.2717	+90	+ 1
ζ Piscium	4.8	+1.07	+ 9.3	+ 7 0.7	10 40.1	- 7 26.6	-0.4293	0.5222	+0.2708	+22	-67
88 Piscium	6.2	1.07	9.6	6 25.8	11 9.3	- 6 58.4	+0.2992	0.5222	0.2705	+61	-28
B. A. C. 410	6.0	1.02	9.6	6 51.2	15 8.1	- 3 7.2	+0.9387	0.5253	0.2687	+90	+ 7
54 Ceti	5.5	0.86	9.0	10 30.9	7 4 21.3	+ 9 40.4	+0.6950	0.5342	0.2599	+90	- 5
B. A. C. 609	6.0	0.81	8.7	11 46.6	8 18.4	-10 30.4	+0.4315	0.5371	0.2565	+69	-18
19 Arietis	5.7	+0.75	+ 8.0	+14 46.8	14 29.2	- 4 32.1	-1.0460	0.5429	+0.2501	-14	-75
36 Arietis	6.5	0.58	7.6	17 18.8	8 4 16.5	+ 8 46.4	-0.2665	0.5546	0.2319	+30	-51
40 Arietis	6.3	0.58	7.6	17 50.4	6 5.0	+10 31.0	-0.3802	0.5567	0.2291	+24	-56
π Arietis	5.7	0.58	7.9	17 1.2	6 25.2	+10 50.4	+0.5225	0.5578	0.2287	+77	-10
ρ^1 Arietis	7.0	0.54	7.9	17 18.1	8 49.0	-10 51.0	+0.7812	0.5597	0.2247	+90	+ 5
ρ^2 Arietis	6.0	+0.54	+ 7.7	+17 54.0	9 11.4	-10 29.4	+0.2643	0.5598	+0.2240	+59	-22
ρ^3 Arietis	6.0	0.54	7.8	17 35.9	9 26.6	-10 14.7	+0.6238	0.5608	0.2237	+86	- 4
50 Arietis	6.8	0.52	7.8	17 34.9	11 11.3	- 8 23.9	+1.0280	0.5616	0.2206	+90	+21
54 Arietis	6.3	0.49	7.8	18 23.2	14 27.4	- 5 25.0	+0.9313	0.5656	0.2146	+90	+15
δ Arietis	4.0	0.48	7.5	19 19.4	15 48.1	- 4 6.3	+0.2803	0.5667	0.2121	+60	-20
ζ Arietis	4.7	+0.47	+ 7.2	+20 39.0	17 4.7	- 2 53.6	-0.7785	0.5678	+0.2097	+ 1	-69
τ^1 Arietis	5.0	0.44	7.2	20 45.8	19 44.6	- 0 19.8	-0.3381	0.5709	0.2045	+26	-51
τ^2 Arietis	5.3	0.43	7.4	20 21.5	20 22.6	+ 0 16.8	+0.1918	0.5715	0.2032	+55	-23
65 Arietis	6.0	0.43	7.4	20 25.5	21 3.6	+ 0 56.2	+0.2680	0.5719	0.2018	+60	-19
B. A. C. 1055	6.8	0.43	7.1	21 39.9	21 5.8	+ 0 58.3	-0.9638	0.5719	0.2018	-11	-68
9 Tauri	7.0	+0.39	+ 6.9	+22 51.5	9 2 5.0	+ 5 46.1	-1.1750	0.5766	+0.1909	-29	-67
23 Tauri	4.7	0.35	7.0	23 37.0	5 47.6	+ 9 20.0	-1.2360	0.5808	0.1824	-36	-66
B. A. C. 1170	6.3	0.34	7.1	23 5.6	6 36.0	+10 6.5	-0.5675	0.5811	0.1805	+13	-61
26 Tauri	7.0	0.34	7.0	23 31.8	6 49.7	+10 19.7	-0.9605	0.5817	0.1799	-12	-66
27 Tauri	4.0	0.34	7.0	23 43.6	6 54.6	+10 24.4	-1.1410	0.5819	0.1799	-26	-66
28 Tauri	6.2	+0.34	+ 7.0	+23 48.7	6 55.1	+10 25.0	-1.2250	0.5819	+0.1797	-35	-66

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	"	° '	d h m	h m				°	°
B. A. C. 1189	6.0	+0.33	+ 7.5	+21 55.3	9 7 14.2	+10 45.2	+0.7117	0.5820	+0.1790	+90	+ 6
32 Tauri	6.0	0.32	7.4	22 10.3	9 57.2	-10 40.2	+0.9397	0.5848	0.1722	+90	+21
33 Tauri	6.3	0.32	7.2	22 52.0	10 1.4	-10 36.2	+0.2619	0.5848	0.1720	+59	-16
B. A. C. 1238	6.3	0.31	7.2	22 54.1	11 31.9	- 9 9.4	+0.4838	0.5869	0.1673	+75	- 4
36 Tauri	6.0	0.30	7.1	23 48.7	12 50.4	- 7 54.1	-0.2020	0.5876	0.1649	+33	-39
χ Capricorni	5.7	+0.24	+ 6.9	+25 22.7	19 46.7	- 1 14.7	-0.6775	0.5940	+0.1461	+ 6	-37
B. A. C. 1347	7.3	0.24	7.2	24 9.5	20 8.7	- 0 53.6	+0.5866	0.5941	0.1451	+85	+ 4
62 Tauri	6.0	0.24	7.3	24 3.2	20 20.2	- 0 42.5	+0.7171	0.5940	0.1446	+90	+10
B. A. C. 1421	6.0	0.15	6.9	27 53.8	10 13 10.2	- 8 35.3	-1.0770	0.6071	0.0929	-23	-62
β Tauri	2.0	0.12	6.9	28 31.1	19 7.8	- 2 53.2	-1.1970	0.6106	0.0729	-37	-61
136 Tauri	5.3	+0.09	+ 7.2	+27 35.3	11 4 47.6	+ 6 21.1	+0.2650	0.6145	+0.0393	+60	- 4
				NEW	*MOON.*						
B. A. C. 3138	6.3	0.30	5.5	21 43.5	14 7 7.1	+ 5 31.9	-0.2468	0.5724	-0.1919	+31	-44
B. A. C. 3206	6.3	0.32	5.0	20 15.1	11 48.3	+10 2.7	+0.3247	0.5671	0.2016	+63	-17
η Leonis	3.3	+0.43	+ 3.3	+17 17.2	15 6 11.9	+ 3 46.5	-0.6871	0.5481	-0.2325	+ 8	-73
42 Leonis	6.0	0.47	2.6	15 30.9	12 47.2	+10 8.3	-0.4367	0.5425	0.2415	+21	-62
B. A. C. 3579	7.2	0.49	2.3	14 53.4	16 0.5	-10 44.9	-0.5785	0.5387	0.2447	+14	-71
i Leonis	5.7	0.50	2.1	14 41.2	17 34.9	- 9 13.7	-0.7571	0.5362	0.2461	+ 4	-73
l Leonis	5.3	0.54	+ 0.8	11 6.7	16 1 39.7	- 1 24.6	+0.9074	0.5289	0.2537	+90	+ 7
B. A. C. 3837	6.3	+0.62	- 0.6	+ 8 38.8	13 44.5	+10 17.3	+0.3505	0.5194	-0.2619	+64	-24
B. A. C. 4039	7.5	0.77	3.6	4 4.6	17 12 16.5	+ 8 8.8	-0.8541	0.5060	0.2683	- 1	-86
b Virginis	5.8	0.79	3.7	4 15.0	13 10.4	+ 9 1.0	-1.2770	0.5054	0.2683	-31	-86
10 Virginis	6.4	0.82	4.4	+ 2 29.8	18 16.9	-10 1.3	-0.7971	0.5032	0.2683	+ 3	-74
13 Virginis	6.1	0.84	5.6	- 0 11.7	23 1.8	- 5 24.7	+0.7876	0.5012	0.2680	+76	- 3
η Virginis	4.0	+0.85	- 5.6	- 0 4.4	23 41.4	- 4 46.1	+0.4822	0.5008	-0.2679	+72	-19
SATURN				0 44.5	18 8 28.3	+ 3 45.7	-1.1520	0.4958	0.2645	-20	-90
38 Virginis	6.2	1.00	7.6	2 58.4	17 31.4	-11 26.5	-1.1570	0.4967	0.2626	-21	-90
h Virginis	5.8	1.19	10.6	9 37.0	19 14 57.4	+ 9 23.4	+0.5141	0.4962	0.2498	+71	-18
86 Virginis	5.9	1.26	11.7	11 53.6	21 55.3	- 7 50.4	+1.2740	0.4972	0.2433	+78	+32
B. A. C. 4896	6.6	+1.68	-14.0	-17 20.9	21 8 29.4	+ 1 43.9	-0.5788	0.5082	-0.2061	+ 7	-81
10 Libræ	6.5	1.68	14.1	17 55.1	8 37.3	+ 1 51.6	+0.0220	0.5082	0.2061	+37	-43
ι^1 Libræ	5.0	1.82	14.4	19 23.4	19 0.0	+11 55.8	-0.4142	0.5124	0.1911	+13	-69
ι^2 Libræ	6.5	1.83	14.3	19 14.8	19 33.5	-11 31.7	-0.6794	0.5130	0.1902	- 1	-90
B. A. C. 5254	5.8	2.14	15.0	23 39.7	22 15 36.1	+ 7 53.8	+0.7199	0.5235	0.1563	+66	- 4
δ Scorpii	2.3	+2.17	-14.3	-22 19.2	18 43.9	+10 55.7	-1.2450	0.5252	-0.1507	-46	-86
19 Scorpii	5.1	2.32	14.0	23 54.9	23 4 24.8	- 3 42.0	-0.8461	0.5306	0.1315	-18	-90
σ Scorpii	3.4	2.34	14.4	25 20.3	4 38.7	- 3 28.6	+0.7020	0.5306	0.1311	+64	- 5
α Scorpii	1.4	2.39	14.3	26 11.9	8 30.3	+ 0 15.6	+1.1630	0.5325	0.1232	+64	+30
25 Scorpii	7.0	2.50	13.3	25 20.2	16 40.0	+ 8 9.1	-0.7259	0.5368	0.1056	-14	-90
B. A. C. 5800	7.5	+2.69	-12.1	-26 51.6	25 5 11.6	- 3 44.6	-0.1846	0.5424	-0.0790	+12	-55
A Ophiuchi	4.9	2.70	12.1	26 26.9	5 44.2	- 3 13.1	-0.6829	0.5429	0.0759	-14	-90
B. A. C. 5813	6.8	2.70	12.1	26 23.7	6 8.0	- 2 50.0	-0.7714	0.5429	0.0753	-19	-90
38 Ophiuchi	6.7	2.72	12.0	26 30.9	6 45.1	- 2 14.2	-0.6847	0.5434	0.0729	-15	-90
43 Ophiuchi	5.8	2.78	12.0	28 2.5	9 17.8	+ 0 13.3	+0.8264	0.5439	0.0673	+62	+ 4
3 Sagittarii *var.*	4.6	+2.91	-10.3	-27 47.6	20 9.6	+10 42.6	-0.0350	0.5480	-0.0407	+16	-46
B. A. C. 6127	5.1	3.03	9.0	28 28.2	25 5 15.4	- 4 30.7	+0.4471	0.5504	0.0177	+41	-18
B. A. C. 6194	5.1	3.04	8.0	27 4.9	9 41.7	- 0 13.6	-1.1380	0.5514	-0.0068	-50	-90
φ Sagittarii	3.7	3.16	5.6	27 6.1	21 50.9	+11 30.0	-0.9977	0.5527	+0.0251	-38	-90
τ Sagittarii	3.6	3.24	4.1	27 49.7	26 7 12.2	- 3 28.5	+0.1501	0.5526	0.0494	+26	-35
B. A. C. 6628	5.9	+3.30	- 2.6	-28 4.3	14 56.6	+ 3 59.7	+0.8746	0.5518	+0.0690	+62	+ 8
B. A. C. 6666	5.8	3.28	- 2.0	27 12.2	17 20.1	+ 6 18.2	+0.0803	0.5516	0.0752	+25	-39
ω Sagittarii	5.1	3.30	+ 0.4	26 35.0	27 4 53.2	- 6 32.9	+0.4510	0.5489	0.1039	+48	-19
A Sagittarii	5.3	3.29	0.7	26 29.1	6 17.6	- 5 11.2	+0.4927	0.5487	0.1071	+51	-16
B. A. C. 7077	6.4	3.28	3.7	25 18.3	21 38.9	+ 9 38.4	+1.1200	0.5434	0.1424	+65	+25
χ Capricorni	5.4	+3.16	+ 6.9	-21 37.4	28 14 12.5	+ 1 38.8	-0.2196	0.5370	+0.1765	+20	-57

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
JULY.											
		s	″	° ′	d h m	h m				°	°
26 Capricorni	7.0	+3.14	+ 6.9	−20 37.4	28 14 33.0	+ 1 58.7	−1.2380	0.5364	+0.1772	−43	−90
27 Capricorni	6.5	3.15	7.0	20 59.1	14 40.6	+ 2 6.1	−0.8239	0.5364	0.1774	−12	−90
φ Capricorni	5.5	3.14	7.5	21 5.7	17 32.3	+ 4 52.0	−0.1941	0.5347	0.1828	+22	−55
33 Capricorni	5.7	3.14	8.2	21 18.3	21 33.9	+ 8 45.7	+0.7861	0.5332	0.1904	+69	− 1
37 Capricorni	6.0	3.10	8.9	20 33.6	29 2 40.0	−10 18.1	+0.9781	0.5309	0.1993	+69	+11
38 Capricorni	6.9	+3.10	+ 8.9	−20 43.5	2 41.7	−10 16.5	+1.1610	0.5309	+0.1993	+69	+26
ε Capricorni	4.7	3.07	9.2	19 56.5	3 44.3	− 9 15.9	+0.5265	0.5304	0.2011	+63	−16
κ Capricorni	5.0	3.05	9.6	19 21.0	6 24.9	− 6 40.5	+0.4348	0.5291	0.2056	+58	−21
B. A. C. 7550	6.3	3.07	9.8	20 6.3	6 41.0	− 6 24.8	+1.3000	0.5289	0.2059	+70	+41
50 Aquarii	6.1	2.84	12.2	14 4.1	30 2 53.6	−10 50.4	−0.6892	0.5205	0.2350	+ 4	−90
B. A. C. 7835	6.5	+2.81	+12.5	−13 27.6	5 39.6	− 8 9.5	−0.6795	0.5198	+0.2284	+ 5	−90
56 Aquarii	6.3	2.84	12.7	15 7.8	5 47.1	− 8 2.3	+1.1270	0.5198	0.2386	+75	+20
70 Aquarii	6.2	2.70	13.5	11 7.0	14 55.8	+ 0 49.6	−0.9426	0.5170	0.2486	− 9	−90
74 Aquarii	6.0	2.69	13.8	12 10.9	17 25.6	+ 3 14.9	+0.8445	0.5162	0.2510	+78	+ 1
ψ¹ Aquarii	4.1	2.58	14.8	9 40.0	31 4 46.0	− 9 45.3	+1.0850	0.5137	0.2607	+80	+16
χ Aquarii	5.3	+2.56	+14.5	− 8 18.4	5 17.5	− 9 14.8	−0.2127	0.5135	+0.2611	+31	−56
24 Piscium	6.1	+2.35	+15.2	− 3 44.7	23 43.0	+ 8 37.7	−0.0943	0.5116	+0.2714	+39	−46
AUGUST.											
27 Piscium	5.1	+2.32	+15.5	− 4 8.7	1 2 39.8	+11 29.2	+1.1270	0.5118	+0.2726	+86	+18
29 Piscium	5.0	+2.31	+15.5	− 3 37.1	4 16.1	−10 57.4	+1.0110	0.5118	+0.2729	+86	+10
B. A. C. 8351	8.0	2.31	15.5	3 21.4	4 22.6	−10 51.2	+0.7690	0.5118	0.2730	+79	− 4
B. A. C. 5	5.7	2.27	15.6	− 2 48.8	7 47.1	− 7 32.7	+1.1310	0.5121	0.2739	+87	+18
44 Piscium	5.9	2.18	15.2	+ 1 21.1	16 16.3	+ 0 41.2	−0.8853	0.5130	0.2750	− 1	−89
B. A. C. 237	6.7	2.03	15.0	2 48.6	2 5 19.5	−10 39.4	+1.1810	0.5160	0.2738	+90	+22
B. A. C. 274	6.2	+1.98	+14.9	+ 5 54.7	9 33.7	− 6 33.0	−0.8712	0.5178	+0.2728	− 2	−84
73 Piscium	5.9	1.96	15.1	5 5.3	12 4.3	− 4 7.0	+0.6653	0.5186	0.2718	+88	− 9
ε Piscium	5.5	1.94	15.0	5 5.2	13 49.0	− 2 25.6	+1.1400	0.5194	0.2711	+90	+24
ζ Piscium	4.8	1.92	14.7	7 0.8	16 25.4	+ 0 6.1	−0.1462	0.5207	0.2700	+36	−52
88 Piscium	6.2	1.91	14.9	6 25.9	16 54.9	+ 0 34.6	+0.5865	0.5207	0.2698	+81	−13
B. A. C. 410	6.0	+1.87	+15.0	+ 6 51.3	20 56.3	+ 4 28.4	+1.2300	0.5225	+0.2676	+90	+28
54 Ceti	5.5	1.74	14.1	10 31.0	3 10 20.1	− 6 33.4	+0.9849	0.5302	0.2580	+90	+11
B. A. C. 609	6.0	1.70	13.8	11 46.7	14 21.1	− 2 40.2	+0.7188	0.5326	0.2542	+90	− 3
19 Arietis	5.7	1.64	13.0	14 46.9	20 38.4	+ 3 24.6	−0.7752	0.5375	0.2474	+ 4	−71
36 Arietis	6.5	1.49	12.2	17 18.9	4 10 42.6	− 7 0.0	−0.0031	0.5489	0.2284	+44	−37
40 Arietis	6.3	+1.48	+12.1	+17 50.5	12 33.5	− 5 13.0	−0.1203	0.5504	+0.2256	+38	−42
π Arietis	5.7	1.48	12.3	17 1.3	12 54.3	− 4 52.9	+0.7914	0.5504	0.2252	+90	+ 5
ρ¹ Arietis	7.0	1.45	12.2	17 18.2	15 21.5	− 2 30.9	+1.0530	0.5522	0.2212	+90	+22
ρ² Arietis	6.0	1.44	12.0	17 54.1	15 44.3	− 2 8.9	+0.5282	0.5530	0.2205	+78	− 9
ρ³ Arietis	6.0	1.44	12.1	17 36.0	15 59.9	− 1 53.9	+0.8939	0.5531	0.2201	+90	+12
δ Arietis	4.0	+1.38	+11.5	+19 19.5	22 30.8	+ 4 22.9	+0.5373	0.5590	+0.2084	+79	− 7
ζ Arietis	4.7	1.36	11.0	20 39.1	23 49.3	+ 5 38.6	−0.5353	0.5602	0.2059	+15	−62
τ¹ Arietis	5.0	1.34	11.0	20 45.9	5 2 33.3	+ 8 16.6	−0.0962	0.5630	0.2006	+39	−38
τ² Arietis	5.3	1.33	11.2	20 21.7	3 12.2	+ 8 54.0	+0.4421	0.5631	0.1993	+72	−10
65 Arietis	6.0	1.33	11.1	20 25.6	3 54.3	+ 9 34.5	+0.5162	0.5637	0.1978	+78	− 6
B. A. C. 1055	6.8	+1.32	+10.7	+21 40.0	3 56.6	+ 9 36.7	−0.7319	0.5637	+0.1978	+ 4	−68
9 Tauri	7.0	1.28	10.2	22 51.6	9 3.8	− 9 27.5	−0.9517	0.5684	0.1869	−10	−67
23 Tauri	4.7	1.24	9.9	23 37.1	12 52.5	− 5 47.5	−1.0200	0.5720	0.1783	−16	−66
η Tauri	3.0	1.24	9.8	23 46.6	13 23.5	− 5 20.5	−1.0970	0.5720	0.1773	−22	−66
B. A. C. 1170	6.3	1.24	10.1	23 5.7	13 42.2	− 4 59.7	−0.3449	0.5729	0.1765	+25	−48
26 Tauri	7.0	+1.23	+ 9.9	+23 31.9	13 56.3	− 4 46.1	−0.7455	0.5729	+0.1760	+ 3	−66
27 Tauri	4.0	1.23	9.8	23 43.8	14 1.3	− 4 41.3	−0.9295	0.5729	0.1760	− 9	−66
28 Tauri	6.2	1.23	9.8	23 48.8	14 1.9	− 4 40.7	−1.0110	0.5729	0.1760	−15	−66
B. A. C. 1189	6.0	1.23	10.5	21 55.4	14 21.5	− 4 21.9	+0.9521	0.5729	0.1750	+90	+22
33 Tauri	6.3	1.20	10.1	22 52.1	17 13.3	− 1 36.7	+0.4907	0.5755	0.1681	+76	− 4
B. A. C. 1238	6.3	+1.19	+10.1	+22 54.2	18 46.4	− 0 7.2	+0.7124	0.5773	+0.1644	+90	+ 8

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x′*	*y′*	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
36 Tauri	6.0	+1.18	+ 9.8	+23 48.8	6 2 7.1	+ 7 11.3	+0.0151	0.5775	+0.1622	+45	-28
χ Tauri	5.7	1.11	9.1	25 22.8	3 15.5	+ 8 1.8	-0.4778	0.5842	0.1422	+18	-52
B. A. C. 1347	7.3	1.11	9.5	24 9.6	3 58.1	+ 8 23.5	+0.8032	0.5852	0.1412	+90	+15
62 Tauri	6.0	1.11	9.6	24 3.3	3 50.0	+ 8 35.0	+0.9354	0.5852	0.1406	+90	+24
W. iv, 1421	6.0	0.98	8.0	27 53.8	21 9.6	+ 1 11.9	-0.9173	0.5974	0.0896	-10	-62
β Tauri	2.0	+0.93	+ 7.6	+28 31.1	7 3 17.9	+ 7 4.7	-1.0509	0.6008	+0.0700	-21	-62
136 Tauri	5.3	0.85	7.5	27 35.3	13 14.4	- 7 24.3	+0.4119	0.6047	+0.0367	+71	+ 4
49 Aurigæ	5.7	0.74	6.7	28 6.4	8 4 27.6	+ 7 9.5	+0.0567	0.6067	-0.0155	+47	-12
53 Aurigæ	6.0	0.74	6.5	29 4.6	5 36.0	+ 8 15.0	-0.9337	0.6067	0.0195	-12	-61
54 Aurigæ	6.0	0.74	6.7	28 21.5	6 2.3	+ 8 40.2	-0.2234	0.6067	0.0210	+32	-28
25 Geminorum	6.5	+0.73	+ 6.7	+28 17.8	6 41.5	+ 9 17.7	-0.1767	0.6068	-0.0232	+34	-25
28 Geminorum	6.0	0.73	6.4	29 4.8	7 55.1	+10 28.1	-0.9900	0.6066	0.0275	-17	-61
W. vi, 1656	8.2	0.69	6.5	26 59.7	14 54.8	- 6 50.3	+0.8185	0.6052	0.0512	+90	+25
47 Geminorum	6.0	0.67	6.3	27 2.0	17 41.2	- 4 9.0	+0.6253	0.6040	0.0605	+90	+13
53 Geminorum	6.3	0.66	6.1	28 5.1	19 20.7	- 2 35.7	-0.5320	0.6039	0.0662	+14	-50
59 Geminorum	6.9	+0.64	+ 5.9	+27 50.8	22 31.3	+ 0 26.8	-0.5206	0.6024	-0.0766	+15	-49
ι Geminorum	4.0	0.64	5.9	28 0.7	22 57.5	+ 0 51.9	-0.7191	0.6023	0.0780	+ 3	-62
b¹ Geminorum	5.3	0.64	5.8	28 20.4	9 0 17.2	+ 2 8.2	-1.1540	0.6017	0.0823	-31	-62
b² Geminorum	6.3	0.64	5.7	28 8.3	0 27.9	+ 2 18.4	-0.9679	0.6015	0.0829	-14	-62
B. A. C. 2472	8.0	0.64	5.7	28 8.0	0 46.8	+ 2 36.6	-0.9895	0.6013	0.0839	-16	-62
υ Geminorum	4.3	+0.63	+ 5.9	+27 8.1	2 45.2	+ 4 30.0	-0.1603	0.6002	-0.0903	+35	-30
e Geminorum	6.0	0.60	5.9	26 2.4	5 49.9	+ 7 26.9	+0.6428	0.5988	0.1000	+90	+11
φ Geminorum	5.0	0.60	5.5	27 2.6	9 20.4	+10 48.6	-0.7336	0.5969	0.1107	+ 2	-63
ω¹ Cancri	6.0	0.59	5.6	25 41.2	12 10.8	-10 28.0	+0.2092	0.5950	0.1195	+62	- 9
ω² Cancri	6.3	0.58	5.6	25 23.1	12 29.5	-10 10.1	+0.5650	0.5943	0.1203	+84	+ 4
ψ¹ Cancri	6.8	+0.58	+ 5.3	+26 9.6	15 43.0	- 7 4.6	-0.6173	0.5921	-0.1299	+10	-59
ψ² Cancri	5.7	0.57	5.3	25 50.0	15 49.0	- 6 58.8	-0.3028	0.5921	0.1301	+27	-41
					NEW	*MOON.*					
l Leonis	5.3	0.51	+ 0.6	11 6.7	12 11 29.6	+10 13.4	+0.7571	0.5319	0.2574	+90	- 2
B. A. C. 3837	6.3	+0.53	- 0.5	+ 8 38.8	23 27.6	- 2 11.6	+0.1745	0.5229	-0.2657	+54	-33
B. A. C. 4039	7.5	0.63	2.6	4 4.7	13 21 41.6	- 4 38.1	-1.0710	0.5102	0.2726	-14	-86
10 Virginis	6.4	0.64	3.6	+ 2 29.8	14 3 36.2	+ 1 6.0	-1.0220	0.5078	0.2725	-11	-88
13 Virginis	6.1	0.65	4.4	- 0 11.7	8 16.4	+ 5 37.9	+0.5456	0.5064	0.2721	+77	-16
η Virginis	3.3	0.65	4.3	0 4.4	8 55.5	+ 6 15.9	+0.2395	0.5060	0.2719	+57	-32
h Virginis	5.8	+0.89	- 8.9	- 9 36.9	15 23 30.5	- 4 15.6	+0.2262	0.5003	-0.2524	+54	-32
86 Virginis	5.9	0.95	10.2	11 53.6	16 6 21.3	+ 2 23.4	+0.9792	0.5013	0.2469	+78	+ 9
B. A. C. 4896	6.6	1.33	12.8	17 20.9	17 16 26.2	+11 28.5	-0.8626	0.5104	0.2070	- 9	-90
10 Libræ	6.5	1.33	12.9	17 55.1	16 34.0	+11 36.0	-0.2650	0.5101	0.2068	+23	-59
ι¹ Libræ	5.0	1.47	13.5	19 23.4	18 2 50.0	- 2 26.5	-0.6949	0.5144	0.1914	- 2	-90
ι² Libræ	6.5	+1.47	-13.4	-19 14.8	3 23.2	- 1 53.3	-0.9570	0.5150	-0.1905	-17	-90
B. A. C. 5254	5.8	1.79	14.5	23 39.7	23 16.6	- 6 38.0	+0.4528	0.5236	0.1559	+54	-19
19 Scorpii	5.1	1.98	13.9	23 54.9	19 12 1.6	+ 5 42.5	-1.0980	0.5298	0.1307	-35	-90
σ Scorpii	3.4	2.00	14.4	25 20.3	12 15.4	+ 5 55.8	+0.4461	0.5299	0.1303	+51	-19
α Scorpii	1.4	2.07	14.4	26 11.9	16 6.2	+ 9 39.1	+0.9126	0.5318	0.1223	+64	+ 9
25 Scorpii	7.0	+2.21	-13.5	-25 20.2	20 0 14.9	- 6 28.3	-0.9645	0.5356	-0.1043	-28	-90
B. A. C. 5800	7.5	2.42	12.8	26 51.6	12 45.5	+ 5 37.0	-0.4072	0.5409	0.0758	0	-71
A Ophiuchi	4.9	2.42	12.6	26 26.9	13 18.1	+ 6 8.5	-0.9031	0.5409	0.0745	-27	-90
B. A. C. 5813	6.8	2.43	12.5	26 23.7	13 41.9	+ 6 31.6	-0.9915	0.5414	0.0734	-33	-90
38 Ophiuchi	6.7	2.43	12.5	26 30.9	14 18.9	+ 7 7.3	-0.9048	0.5414	0.0719	-25	-90
43 Ophiuchi	5.8	+2.50	-12.8	-28 2.5	16 51.7	+ 9 34.9	+0.6082	0.5425	-0.0658	+55	- 9
3 Sagittarii *var.*	4.6	2.68	11.2	27 47.6	21 3 43.8	- 3 55.4	-0.2374	0.5464	0.0392	+ 6	-59
B. A. C. 6127	5.1	2.83	10.1	28 28.3	12 50.1	+ 4 51.9	+0.2592	0.5487	0.0162	+20	-29
B. A. C. 6194	5.1	2.85	9.0	27 5.0	17 17.2	+ 9 9.6	-1.3170	0.5494	-0.0048	+ 8	-51
φ Sagittarii	3.7	3.04	7.1	27 6.1	22 5 26.8	- 3 6.4	-1.1600	0.5507	+0.0268	-50	-90
τ Sagittarii	3.6	+3.16	- 5.7	-27 49.7	14 48.8	+ 5 55.8	+0.0036	0.5507	+0.0510	+19	-44

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
B. A. C. 6628	5.9	+3.26	- 4.3	-28 4.4	22 22 33.4	-10 35.8	+0.7420	0.5501	+0.0707	+62	- 1
B. A. C. 6666	5.8	3.25	3.6	27 12.3	23 0 56.8	- 8 17.5	-0.0310	0.5501	0.0769	+19	-46
ω Sagittarii	5.1	3.33	1.0	26 35.0	12 29.6	+ 2 51.2	+0.3430	0.5481	0.1054	+42	-25
A Sagittarii	5.3	3.33	- 0.8	26 29.1	13 53.8	+ 4 12.6	+0.3863	0.5476	0.1088	+45	-22
B. A. C. 7077	6.4	3.41	+ 2.5	25 18.3	24 5 12.8	- 5 0.2	+1.0440	0.5436	0.1444	+65	+18
B. A. C. 7237	6.9	+3.39	+ 4.8	-24 10.9	14 27.0	+ 3 55.5	+1.2540	0.5401	+0.1644	+66	+39
χ Capricorni	5.4	3.35	6.5	21 37.3	21 41.5	+10 55.4	-0.2616	0.5375	0.1789	+18	-59
26 Capricorni	7.0	3.33	6.7	20 37.4	22 1.8	+11 15.0	-1.2720	0.5375	0.1797	-45	-90
27 Capricorni	6.5	3.34	6.7	20 59.1	22 9.4	+11 22.4	-0.8616	0.5374	0.1800	-14	-90
ο Capricorni	5.5	3.35	7.2	21 5.7	25 0 59.9	- 9 52.7	-0.2218	0.5363	0.1855	+21	-57
33 Capricorni	5.7	+3.37	+ 8.0	-21 18.3	4 59.7	- 6 0.8	+0.7591	0.5350	+0.1932	+66	- 3
37 Capricorni	6.0	3.36	9.0	20 33.6	10 3.4	- 1 7.0	+0.9588	0.5330	0.2021	+69	+10
38 Capricorni	6.9	3.36	9.0	20 43.5	10 5.1	- 1 5.4	+1.1400	0.5330	0.2021	+69	+24
ε Capricorni	4.7	3.34	9.3	19 56.5	11 7.1	- 0 5.4	+0.5130	0.5325	0.2040	+62	-17
κ Capricorni	5.0	3.33	9.8	19 21.0	13 46.2	+ 2 28.5	+0.4272	0.5315	0.2085	+58	-22
B. A. C. 7550	6.3	+3.35	+ 9.8	-20 6.3	14 2.2	+ 2 44.0	+1.2880	0.5313	+0.2088	+70	+39
50 Aquarii	6.1	3.22	13.4	14 4.1	26 10 1.5	- 1 54.9	-0.6422	0.5243	0.2386	+ 6	-87
B. A. C. 7835	6.5	3.21	13.8	13 27.6	12 45.3	+ 0 43.8	-0.6291	0.5234	0.2421	+ 7	-86
56 Aquarii	6.3	3.24	13.8	15 7.8	12 52.7	+ 0 50.9	+1.1660	0.5234	0.2423	+75	+23
70 Aquarii	6.2	3.13	15.2	11 6.9	21 54.0	+ 9 35.4	-0.8373	0.5206	0.2525	- 3	-90
74 Aquarii	6.0	+3.13	+15.6	-12 10.8	27 0 21.7	+11 58.6	+0.9101	0.5202	+0.2552	+78	+ 4
ψ¹ Aquarii	4.1	3.06	16.8	9 39.9	11 32.3	- 1 11.5	+1.1750	0.5180	0.2652	+80	+22
χ Aquarii	5.3	3.04	16.8	8 18.3	12 3.3	- 0 41.2	-0.1134	0.5180	0.2656	+36	-50
24 Piscium	6.1	2.90	18.3	3 44.7	28 6 10.2	- 7 7.6	+0.0433	0.5164	0.2758	+46	-42
27 Piscium	5.1	2.88	18.7	4 8.7	9 4.0	- 4 19.1	+1.2600	0.5165	0.2770	+86	+27
29 Piscium	5.0	+2.87	+18.7	- 3 37.1	10 38.8	- 2 47.2	+1.1480	0.5166	+0.2773	+86	+19
B. A. C. 8351	8.0	2.87	18.7	- 3 21.4	10 45.4	- 2 40.9	+0.9069	0.5166	0.2774	+67	+ 3
44 Piscium	5.9	2.77	19.1	+ 1 21.1	22 27.4	+ 8 39.8	-0.7139	0.5180	0.2794	+ 8	-87
B. A. C. 221	5.9	2.69	18.9	4 44.1	29 9 48.8	- 4 19.9	-1.0380	0.5201	0.2779	-12	-85
B. A. C. 274	6.2	2.65	19.0	5 54.7	15 29.0	+ 1 9.8	-0.6757	0.5222	0.2764	+10	-84
73 Piscium	5.9	+2.64	+19.3	+ 5 5.3	17 57.4	+ 3 33.6	+0.8535	0.5229	+0.2754	+90	+ 1
ζ Piscium	4.8	2.61	19.0	7 0.9	22 15.1	+ 7 43.2	+0.0514	0.5244	0.2734	+47	-40
88 Piscium	6 2	2.61	19.2	6 26.0	22 44.2	+ 8 11.4	+0.7823	0.5248	0.2730	+90	- 3
54 Ceti	5.5	2.49	18.7	10 31.1	30 15 57.7	+ 0 51.6	+1.1950	0.5331	0.2603	+90	+27
B. A. C. 609	6.0	2.46	18.4	11 46.8	19 56.6	+ 5 42.8	+0.9333	0.5356	0 2564	+90	+ 9
19 Arietis	5.7	+2.42	+17.6	+14 47.0	31 2 11.1	+10 44.7	-0.5562	0 5392	+0.2494	+16	-70
27 Arietis	6.3	2.36	16.7	17 14.1	10 14.4	- 5 28.5	-1.0900	0.5448	0.2383	-18	-73
36 Arietis	6.5	2.32	16.4	17 19.0	16 11.8	+ 0 16.6	+0.2189	0.5488	0.2292	+57	-26
40 Arietis	6.3	2.31	16.2	17 50.6	18 2.6	+ 2 3.5	+0.1035	0.5504	0.2262	+50	-31
π Arietis	5.7	2.31	16.5	17 1.4	18 23.2	+ 2 23.3	+1.0140	0.5513	0.2257	+90	+19
ρ¹ Arietis	7.0	+2.29	+16.3	+17 18.3	20 50.3	+ 4 45.2	+1.2780	0.5527	+0.2216	+90	+42
ρ² Arietis	6.0	2.29	16.1	17 54.2	21 13.1	+ 5 7.2	+0.7525	0.5526	0.2209	+90	+ 3
ρ³ Arietis	6.0	+2.29	+16.2	+17 36.1	21 28.8	+ 5 22.3	+1.1160	0.5534	+0.2204	+90	+27
SEPTEMBER.											
δ Arietis	4 0	+2.24	+15.5	+19 19.6	1 4 0.0	+11 39.5	+0.7621	0.5584	+0.2084	+89	+ 5
ζ Arietis	4.7	2.24	15.0	20 39.2	5 18.6	-11 4.8	-0.3166	0.5589	0.2062	+27	-50
τ¹ Arietis	5.0	2.24	14.9	20 45.9	8 3.1	- 8 26.2	+0.1270	0.5614	0.2002	+51	-26
τ² Arietis	5 3	2.23	14.9	20 41.6	8 42.2	- 7 48.6	+0.6685	0.5622	0.1991	+90	+ 1
65 Arietis	6.0	2.21	14.9	20 25.6	9 24.5	- 7 7.9	+0.7411	0.5632	0.1974	+90	+ 6
B. A. C. 1055	6.8	+2.21	+14.5	+21 40.0	9 26.8	- 7 5.7	-0.5111	0.5632	+0.1974	+17	-60
66 Arietis	6.0	2.20	14.2	22 26.3	11 3.2	- 5 32.8	-0.9779	0.5637	0.1940	-12	-68
9 Tauri	7.0	2.19	13.8	22 51.6	14 35.5	- 2 8.4	-0.7338	0.5666	0.1863	+ 4	-67
17 Tauri	4.3	2.16	13.3	23 46.8	17 49.8	+ 0 58.6	-1.0750	0.5692	0.1788	-20	-66
23 Tauri	4.7	2.15	13.4	23 37.1	18 25.6	+ 1 33.0	-0.8046	0.5701	0.1776	- 1	-66
η Tauri	3.0	+2.15	+13.3	+23 46.6	18 53.8	+ 2 0.1	-0.8882	0.5701	+0.1765	- 6	-66

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					LIMITING PARALLELS.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
B. A. C. 1170	6.3	+2.14	+13.5	+23 5.7	1 19 15.7	+ 2 21.2	−0.1268	0.5701	+0.1756	+37	−37
B. A. C. 1171	7.0	2.14	13.1	24 1.2	19 18.5	+ 2 23.9	−1.0570	0.5701	0.1756	−18	−66
26 Tauri	7.0	2.14	13.2	23 31.9	19 29.9	+ 2 34.8	−0.5273	0.5696	0.1751	+15	−58
27 Tauri	4.0	2.14	13.1	23 43.7	19 35.0	+ 2 39.9	−0.7115	0.5709	0.1748	+ 5	−66
28 Tauri	6.2	2.14	13.1	23 48.8	19 35.5	+ 2 40.4	−0.7979	0.5709	0.1748	+ 1	−66
B. A. C. 1189	6.0	+2.13	+13.8	+21 55.4	19 55.3	+ 2 59.5	+1.1790	0.5709	+0.1741	+90	+38
33 Tauri	6.3	2.11	13.3	22 52.1	22 48.6	+ 5 46.0	+0.7112	0.5731	0.1670	+90	+ 7
B. A. C. 1238	6.3	2.10	13.2	22 54.2	2 0 22.5	+ 7 16.2	+0.9342	0.5738	0.1631	+90	+21
36 Tauri	6.0	2.09	12.8	23 48.8	1 44.0	+ 8 34.6	+0.2314	0.5751	0.1598	+58	−17
χ Tauri	5.7	2.04	11.7	25 22.8	8 57.0	− 8 29.4	−0.2702	0.5803	0.1408	+29	−41
B. A. C. 1347	7.3	+2.03	+12.1	+24 9.6	9 20.0	− 8 7.2	+1.0200	0.5803	+0.1397	+90	+29
62 Tauri	6.0	2.02	12.1	24 3.3	9 32.0	− 7 55.7	+1.1530	0.5811	0.1393	+90	+40
W. iv, 1421	6.0	1.89	9.4	27 53.9	3 3 7.6	+ 8 57.3	−0.7285	0.5912	0.0879	+ 2	−62
β Tauri	2.0	1.83	8.6	28 31.2	9 22.9	− 9 2.7	−0.8702	0.5944	0.0681	− 7	−61
136 Tauri	5.3	1.73	7.9	27 35.3	19 31.9	+ 0 40.7	+0.5985	0.5971	0.0352	+88	+14
κ Aurigæ	4.7	+1.67	+ 6.5	+29 32.3	4 3 42.7	+ 8 30.9	−1.1980	0.5972	+0.0081	−38	−60
49 Aurigæ	5.7	1.59	6.2	28 6.3	11 7.0	− 8 23.5	+0.2210	0.5981	−0.0165	+58	− 4
53 Aurigæ	6.0	1.57	5.8	29 4.6	12 17.1	− 7 16.3	−0.7827	0.5981	0.0204	− 2	−61
54 Aurigæ	6.0	1.55	5.9	28 21.5	12 44.0	− 6 50.6	−0.0641	0.5978	0.0219	+40	−19
25 Geminorum	6.5	1.53	6.0	28 17.8	13 24.2	− 6 12.0	−0.0202	0.5978	0.0241	+43	−17
28 Geminorum	6.0	+1.53	+ 5.6	+29 4.8	14 39.7	− 4 59.7	−0.8453	0.5975	−0.0283	− 6	−61
W. vi, 1656	8.2	1.45	5.5	26 59.7	21 50.3	+ 1 53.8	+0.9786	0.5957	0.0520	+90	+35
47 Geminorum	6.0	1.42	5.1	27 2.0	5 0 41.1	+ 4 36.5	+0.7784	0.5950	0.0611	+90	+22
53 Geminorum	6.3	1.42	4.7	28 5.1	2 23.4	+ 6 14.6	−0.3953	0.5943	0.0667	+22	−41
59 Geminorum	6.9	1.38	4.4	27 50.8	5 39.1	+ 9 22.2	−0.3868	0.5930	0.0770	+22	−42
ι Geminorum	4.0	+1.39	+ 4.3	+28 0.7	6 5.9	+ 9 47.9	−0.5895	0.5930	−0.0784	+11	−54
b^1 Geminorum	5.3	1.37	4.1	28 20.4	7 27.8	+11 6.4	−1.0320	0.5923	0.0826	−19	−62
b^2 Geminorum	6.3	1.37	4.2	28 8.3	7 38.8	+11 17.0	−0.8431	0.5923	0.0831	− 5	−62
B. A. C. 2472	8.0	1.37	4.1	28 8.0	7 58.2	+11 35.6	−0.8650	0.5921	0.0841	− 7	−62
υ Geminorum	4.3	1.34	4.2	27 8.1	9 59.8	−10 27.8	−0.0304	0.5913	0.0904	+42	−23
c Geminorum	6.0	+1.29	+ 4.2	+26 2.4	13 9.5	− 7 25.8	+0.7794	0.5898	−0.1001	+90	+18
φ Geminorum	5.0	1.27	3.7	27 2.6	16 46.0	− 3 58.0	−0.6207	0.5875	0.1108	+ 9	−58
ω^1 Cancri	6.0	1.22	3.7	25 41.2	19 40.7	− 1 10.5	+0.4214	0.5856	0.1193	+71	− 3
ω^2 Cancri	6.3	1.22	3.7	25 23.1	19 59.8	− 0 52.1	+0.6905	0.5856	0.1203	+90	+11
ψ^1 Cancri	6.8	1.20	3.2	26 9.6	23 18.6	+ 2 18.7	−0.5113	0.5834	0.1297	+16	−53
ψ^2 Cancri	5.7	+1.19	+ 3.3	+25 50.0	23 24.6	+ 2 24.5	−0.1913	0.5828	−0.1300	+33	−35
λ Cancri	5.7	1.14	3.3	24 21.5	6 3 25.3	+ 6 15.7	+0.7642	0.5802	0.1410	+90	+13
υ^1 Cancri *mult.*	6.0	1.13	2.9	24 53.1	5 51.4	+ 8 36.1	−0.1220	0.5785	0.1474	+37	−33
υ^2 Cancri	5.8	1.13	2.9	24 30.0	6 38.6	+ 9 21.4	+0.1509	0.5777	0.1495	+53	−20
υ^3 Cancri	6.0	1.11	2.8	24 26.5	7 48.5	+10 28.6	+0.0356	0.5772	0.1526	+46	−26
υ^4 Cancri	5.7	+1.11	+ 2.7	+24 26.9	8 24.5	+11 3.2	−0.0644	0.5763	−0.1541	+41	−31
ξ Cancri	5.0	0.98	1.8	22 28.7	23 23.9	+ 1 28.6	−0.6415	0.5643	0.1895	+ 9	−66
79 Cancri	6.3	0.98	1.8	22 25.8	23 49.0	+ 1 52.7	−0.6720	0.5641	0.1905	+ 8	−67
B. A. C. 3138	6.3	0.96	1.7	21 43.4	7 1 12.5	+ 3 13.2	−0.2179	0.5633	0.1935	+32	−43
B. A. C. 3206	6.3	0.91	+ 1.5	+20 15.0	5 58.6	+ 7 48.9	+0.3410	0.5595	0.2032	+64	−16
				NEW	*MOON.*						
h Virginis	5.8	+0.67	− 8.1	− 9 36.9	12 8 24.5	+ 6 26.3	+0.0681	0.5040	−0.2557	+46	−41
VENUS				9 56.4	12 10.8	+10 6.0	−0.5332	0.4553	0.2308	+15	−77
86 Virginis	5.9	0.71	9.0	11 53.5	15 11.2	−10 58.8	+0.8091	0.5032	0.2498	+65	− 2
B. A. C. 4896	6.6	0.97	11.5	17 20.9	14 0 53.8	− 2 16.1	−1.0470	0.5135	0.2089	−21	−90
10 Libræ	6.5	+0.97	−11.6	−17 55.1	1 1.2	− 2 8.8	−0.4501	0.5135	−0.2087	+13	−72
ι^1 Libræ	5.0	1.07	12.2	19 23.4	11 11.3	+ 7 42.6	−0.8845	0.5170	0.1928	−13	−90
ι^2 Libræ	6.5	1.08	12.1	19 14.8	11 44.1	+ 8 14.4	−1.1480	0.5177	0.1920	−31	−90
B. A. C. 5254	5.8	1.35	13.3	23 39.7	15 7 27.6	+ 3 20.8	+0.2590	0.5258	0.1567	+43	−30
19 Scorpii	5.1	1.55	12.9	23 54.9	20 8.3	− 8 23.1	−1.2900	0.5309	0.1308	−56	−89
σ Scorpii	3.4	+1.55	−13.4	−25 20.3	20 22.0	− 8 9.8	+0.2523	0.5314	−0.1305	+40	−30

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
α Scorpii	1.4	+1.62	-13.5	-26 11.9	16 0 11.7	- 4 27.6	+0.7199	0.5325	-0.1230	+64	- 4
25 Scorpii	7.0	1.75	12.8	25 20.2	8 19.0	+ 3 23.5	-1.1550	0.5357	0.1042	-40	-90
B. A. C. 5800	7.5	1.97	12.7	26 51.6	20 48.8	- 8 31.9	-0.5937	0.5403	0.0752	-10	-87
A Ophiuchi	4.9	1.97	12.5	26 26.9	21 21.4	- 8 0.4	-1.0900	0.5404	0.0741	-40	-90
B. A. C. 5813	6.8	1.98	12.5	26 23.7	21 45.2	- 7 37.3	-1.1790	0.5408	0.0730	-48	-90
38 Ophiuchi	6.7	+1.99	-12.5	-26 30.9	22 22.3	- 7 1.6	-1.0900	0.5411	-0.0716	-40	-90
43 Ophiuchi	5.8	2.05	12.8	28 2.5	17 0 55.1	- 4 33.9	+0.4241	0.5417	0.0655	+43	-20
3 Sagittarii *var.*	4.6	2.24	11.6	27 47.6	11 48.4	+ 5 57.0	-0.4183	0.5444	0.0385	- 5	-72
B. A. C. 6127	5.1	2.40	10.7	28 28.3	20 56.7	- 9 13.7	+0.0847	0.5461	-0.0155	+20	-39
τ Sagittarii	3.6	2.78	6.7	27 49.7	18 23 4.9	- 8 0.3	-0.1538	0.5474	+0.0515	+11	-54
B. A. C. 6628	5.9	+2.91	- 5.5	-28 4.4	19 6 53.0	- 0 28.4	+0.5937	0.5466	+0.0711	+54	-11
B. A. C. 6666	5.8	2.91	4.8	27 12.3	9 17.7	+ 1 51.2	-0.1789	0.5464	0.0772	+12	-55
ω Sagittarii	5.1	3.04	2.4	26 35.0	20 56.0	-10 54.6	+0.2055	0.5445	0.1056	+35	-33
b Sagittarii	4.6	3.07	2.6	27 27.2	21 25.5	-10 26.1	+1.2070	0.5444	0.1069	+63	+36
A Sagittarii	5.3	3.05	- 2.1	26 29.1	22 20.9	- 9 32.5	-0.2508	0.5441	0.1090	+37	-30
B. A. C. 7077	6.4	+3.19	+ 1.0	-25 18.3	20 13 47.1	+ 5 22.1	+0.9247	0.5399	+0.1445	+65	+ 9
B. A. C. 7237	6.9	3.25	3.1	24 11.0	23 5.0	- 9 38.7	+1.1460	0.5371	0.1646	+66	+26
χ Capricorni	5.4	3.24	5.1	21 37.3	21 6 22.1	- 2 36.1	-0.3638	0.5348	0.1793	+13	-66
27 Capricorni	6.5	3.24	5.0	20 59.1	6 50.1	- 2 9.0	-0.9638	0.5344	0.1802	-19	-90
φ Capricorni	5.5	3.26	5.9	21 5.7	9 41.4	+ 0 36.7	-0.3221	0.5335	0.1858	+16	-63
33 Capricorni	5.7	+3.30	+ 6.5	-21 18.3	13 42.3	+ 4 29.6	+0.6643	0.5323	+0.1934	+68	- 8
35 Capricorni	6.2	3.31	6.7	21 39.4	15 9.7	+ 5 54.2	+1.3240	0.5318	0.1961	+68	+46
37 Capricorni	6.0	3.31	7.5	20 33.6	18 47.1	+ 9 24.6	+0.8710	0.5306	0.2025	+69	+ 4
38 Capricorni	6.9	3.32	7.5	20 43.5	18 48.8	+ 9 26.2	+1.0520	0.5306	0.2027	+69	+16
ε Capricorni	4.7	3.30	8.1	19 56.6	19 51.0	+10 26.4	+0.4289	0.5301	0.2045	+57	-23
κ Capricorni	5.0	+3.30	+ 8.7	-19 21.1	22 30.5	-10 59.3	+0.3466	0.5294	+0.2090	+54	-26
B. A. C. 7550	6.3	3.32	8.6	20 6.4	22 46.5	-10 43.8	+1.2090	0.5293	0.2095	+70	+29
50 Aquarii	6.1	3.26	13.0	14 4.1	22 18 45.6	+ 8 37.1	-0.6963	0.5237	0.2401	+ 3	-90
B. A. C. 7835	6.5	3.26	13.5	13 27.6	21 29.0	+11 15.4	-0.6778	0.5233	0.2435	+ 5	-90
56 Aquarii	6.3	3.30	13.2	15 7.8	21 36.4	+11 22.5	+1.1120	0.5233	0.2435	+75	+18
70 Aquarii	6.2	+3.23	+15.2	-11 7.0	23 6 35.1	- 3 55.6	-0.8704	0.5214	+0.2438	- 4	-90
74 Aquarii	6.0	3.25	15.4	12 10.8	9 1.8	- 1 33.4	+0.8712	0.5211	0.2571	+78	+ 2
ψ¹ Aquarii	4.1	3.24	17.2	9 39.9	20 6.9	+ 9 11.0	+1.1500	0.5199	0.2675	+80	+20
χ Aquarii	5.3	3.21	17.4	8 18.3	20 37.1	+ 9 40.3	-0.1319	0.5201	0.2681	+36	-51
24 Piscium	6.1	3.16	19.7	3 44.7	24 14 31.0	+ 3 1.0	+0.0533	0.5202	0.2793	+47	-42
27 Piscium	5.1	+3.17	+20.0	- 4 8.7	17 22.1	+ 5 46.8	+1.2630	0.5205	+0.2805	+86	+28
29 Piscium	5.0	3.17	20.1	3 37.1	18 55.4	+ 7 17.2	+1.1570	0.5207	0.2811	+86	+20
B. A. C. 8351	8.0	3.17	20.1	- 3 21.4	19 1.8	+ 7 23.3	+0.9164	0.5207	0.2811	+87	+ 4
44 Piscium	5.9	3.11	21.1	+ 1 21.1	25 6 31.5	- 5 28.4	-0.6726	0.5230	0.2832	+10	-88
B. A. C. 221	5.9	3.08	21.7	4 44.2	17 39.1	+ 5 18.2	-0.9792	0.5262	0.2826	- 8	-83
B. A. C. 274	6.2	+3.08	+21.8	+ 5 54.8	23 11.8	+10 40.3	-0.6160	0.5281	+0.2809	+13	-81
73 Piscium	5.9	3.08	22.0	5 5.4	26 1 36.9	-10 59.2	+0.9020	0.5293	0.2799	+90	+ 4
ζ Piscium	4.8	3.07	21.8	7 1.0	5 48.6	- 6 55.6	+0.1118	0.5311	0.2780	+50	-37
88 Piscium	6.2	3.07	21.9	6 26.1	6 17.0	- 6 28.2	+0.8347	0.5311	0.2778	+90	0
54 Ceti	5.5	3.03	21.6	10 31.2	23 5.5	+ 9 47.0	+1.2620	0.5401	0.2649	+90	+33
B. A. C. 609	6.0	+3.03	+21.5	+11 46.9	27 2 58.4	-10 28.0	+1.0060	0.5428	+0.2608	+90	+13
19 Arietis	5.7	3.03	21.1	14 47.0	9 3.6	- 4 35.3	-0.4592	0.5469	0.2535	+20	-64
27 Arietis	6.3	3.03	20.4	17 14.1	16 54.9	+ 2 59.5	-0.9826	0.5522	0.2424	-10	-73
36 Arietis	6.5	2.99	20.0	17 19.0	22 43.7	+ 8 36.0	+0.3172	0.5565	0.2329	+63	-21
40 Arietis	6.3	2.99	19.8	17 50.6	28 0 31.8	+10 20.2	+0.2031	0.5581	0.2299	+56	-26
π Arietis	5.7	+2.99	+19.9	+17 1.4	0 51.6	+10 39.2	+1.1060	0.5581	+0.2294	+90	+25
ρ² Arietis	6.0	2.99	19.6	17 54.2	3 37.8	-10 40.6	+0.8489	0.5603	0.2244	+90	+ 9
ρ³ Arietis	6.0	2.99	19.7	17 36.1	3 53.2	-10 25.8	+1.2100	0.5604	0.2240	+90	+35
δ Arietis	4.0	2.98	18.8	19 19.6	10 15.3	- 4 17.7	+0.8586	0.5648	0.2114	+90	+11
ζ Arietis	4.7	2.98	18.4	20 39.2	11 32.2	- 3 3.7	-0.2063	0.5663	0.2089	+33	-44
τ¹ Arietis	5.0	+2.98	+18.2	+20 46.0	14 13.2	- 0 28.7	+0.2331	0.5683	+0.2032	+58	-21

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		s	"	° '	d h m	h m				°	°
τ^2 Arietis	5.3	+2.97	+18.2	+20 21.8	28 14 51.5	+ 0 8.1	+0.7679	0.5687	+0.2018	+90	+ 7
65 Arietis	6.0	2.96	18.2	20 25.7	15 31.9	+ 0 46.9	+0.8381	0.5693	0.2003	+90	+11
B. A. C. 1055	6.8	2.97	17.8	21 40.1	15 35.0	+ 0 49.9	-0.3973	0.5693	0.2002	+23	-53
66 Arietis	6.0	2.98	17.6	22 26.4	17 9.4	+ 2 20.8	-0.8634	0.5701	0.1968	- 4	-68
9 Tauri	7.0	2.96	17.0	22 51.7	20 37.3	+ 5 40.8	-0.6186	0.5729	0.1888	+10	-64
g Pleiadum	6.3	+2.97	+16.5	+23 57.4	23 45.8	+ 8 42.1	-1.1390	0.5750	+0.1813	-25	-66
17 Tauri	4.3	2.97	16.5	23 46.9	23 47.7	+ 8 43.9	-0.9554	0.5750	0.1812	-11	-66
20 Tauri	5.0	2.96	16.4	24 2.3	29 0 10.4	+ 9 5.6	-1.1470	0.5750	0.1804	-26	-66
22 Tauri	7.0	2.96	16.3	24 11.9	0 15.6	+ 9 10.6	-1.2900	0.5753	0.1801	-44	-66
23 Tauri	4.7	2.96	16.5	23 37.2	0 22.8	+ 9 17.6	-0.6890	0.5758	0.1799	+ 6	-66
η Tauri	3.0	+2.96	+16.4	+23 46.7	0 50.6	+ 9 44.3	-0.7643	0.5759	+0.1786	+ 2	-66
B. A. C. 1170	6.3	2.95	16.4	23 5.8	1 12.0	+10 4.9	-0.0151	0.5759	0.1778	+43	-31
B. A. C. 1171	7.8	2.96	16.2	24 1.3	1 14.7	+10 7.5	-0.9387	0.5759	0.1777	-10	-64
26 Tauri	7.0	2.96	16.3	23 32.0	1 25.9	+10 18.3	-0.4140	0.5766	0.1772	+22	-52
27 Tauri	4.0	2.96	16.3	23 43.9	1 30.9	+10 23.1	-0.5984	0.5766	0.1770	+12	-62
28 Tauri	6.2	+2.96	+16.2	+23 48.9	1 31.4	+10 23.6	-0.6806	0.5766	+0.1770	+ 7	-65
33 Tauri	6.3	2.93	16.1	22 52.2	4 40.9	-10 34.3	+0.8181	0.5786	0.1690	+90	+14
B. A. C. 1238	6.3	2.93	16.0	22 54.3	6 13.1	- 9 5.8	+1.0380	0.5794	0.1651	+90	+28
36 Tauri	6.0	2.92	15.5	23 48.9	7 33.1	- 7 48.9	+0.3402	0.5806	0.1615	+65	-11
χ Tauri	5.7	2.91	14.2	25 22.8	14 39.2	- 0 59.8	-0.1543	0.5851	0.1422	+36	-34
B. A. C. 1347	7.3	+2.88	+14.5	+24 9.6	15 1.7	- 0 38.1	+1.1270	0.5852	+0.1413	+90	+37
W. iv, 1421	6.0	2.81	10.9	27 53.9	30 8 36.3	- 7 46.6	-0.6132	0.5940	0.0883	+10	-56
22 Aurigæ	7.0	2.79	9.9	28 50.5	13 42.9	- 2 52.8	-1.1530	0.5957	0.0720	-31	-61
β Tauri	2.0	2 77	9.6	28 31.2	14 48.6	- 1 49.8	-0.7534	0.5961	0.0684	+ 1	-61
B. A. C. 1772	6.3	2.75	8.7	29 9.3	19 39.5	+ 2 48.9	-1.1000	0.5969	0.0525	-26	-61

OCTOBER.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
136 Tauri	5.3	+2.68	+ 8.2	+27 35.3	1 0 54.8	+ 7 51.0	+0.7106	0.5973	+0.0352	+90	+20
k Aurigæ	4.7	2.62	6.5	29 32.3	9 5.0	- 8 19.5	-1.0860	0.5973	+0.0079	-25	-60
49 Aurigæ	5.7	2.50	5.7	28 6.4	16 30.1	- 1 13.1	+0.3311	0.5962	-0.0169	+65	+ 2
53 Aurigæ	6.0	2.50	5.1	29 4.6	17 40.5	- 0 5.6	-0.6757	0.5960	0.0208	+ 5	-57
54 Aurigæ	6.0	+2.48	+ 5.2	+28 21.5	18 7.6	+ 0 20.4	+0.0439	0.5960	-0.0221	+47	-13
25 Geminorum	6.5	2.47	5.2	28 17.8	18 47.9	+ 0 59.0	+0.0912	0.5960	0.0245	+50	-11
28 Geminorum	6.0	2.48	4.8	29 4.8	20 3.7	+ 2 11.6	-0.7370	0.5957	0.0286	+ 2	-61
W. vi, 1656	8.2	2.34	4.3	26 59.7	2 3 17.0	+ 9 6.9	+1.0860	0.5932	0.0520	+90	+42
47 Geminorum	6.0	2.31	3.7	27 2.0	6 9.1	+11 51.9	+0.8880	0.5919	0.0612	+90	+28
53 Geminorum	6.3	+2.31	+ 3.2	+28 5.1	7 52.3	-10 29.2	-0.2916	0.5909	-0.0666	+28	-35
59 Geminorum	6.9	2.27	2.7	27 50.7	11 9.8	- 7 19.7	-0.2850	0.5895	0.0768	+28	-36
ι Geminorum	4.0	2.26	2.5	28 0.6	11 36.9	- 6 53.7	-0.4885	0.5887	0.0784	+17	-48
b^1 Geminorum	5.3	2.25	2.3	28 20.3	12 59.7	- 5 34.3	-0.9333	0.5886	0.0824	-12	-62
b^2 Geminorum	6.3	2.25	2.4	28 8.2	13 10.8	- 5 23.7	-0.7433	0.5883	0.0824	+ 2	-62
B. A. C. 2472	8.0	+2.25	+ 2.3	+28 7.9	13 30.4	- 5 4.8	-0.7654	0.5878	-0.0842	0	-62
υ Geminorum	4.3	2.20	2.3	27 8.0	15 33.4	- 3 6.8	+0.0713	0.5866	0.0904	+48	-18
c Geminorum	6.0	2.13	2.0	26 2.3	18 45.4	- 0 2.4	+0.8839	0.5848	0.0998	+90	+24
ϕ Geminorum	5.0	2.10	1.2	27 2.5	22 24.7	+ 3 28.0	-0.5240	0.5820	0.1104	+15	-52
ω^1 Cancri	6.0	2.04	1.2	25 41.1	3 1 21.9	+ 6 18.1	+0.5225	0.5799	0.1189	+80	+ 2
ω^2 Cancri	6.3	+2.03	+ 1.2	+25 23.0	1 41.3	+ 6 36.8	+0.7918	0.5799	-0.1197	+90	+17
ψ^1 Cancri	6.8	2.01	0.5	26 9.5	5 3.1	+ 9 50.6	-0.4175	0.5776	0.1290	+21	-48
ψ^2 Cancri	6.7	2.00	0.6	25 49.9	5 9.3	+ 9 56.6	-0.0971	0.5776	0.1291	+39	-30
λ Cancri	5.7	1.92	+ 0.5	24 21.5	9 13.8	-10 8.4	+0.8612	0.5746	0.1403	+90	+19
ν^1 Cancri *mult.*	6.0	1.91	- 0.1	24 53.1	11 42.5	- 7 45.3	-0.0324	0.5724	0.1467	+42	-29
ν^2 Cancri	5.8	+1.88	0.0	+24 30.0	12 30.5	- 6 59.2	+0.2442	0.5715	-0.1486	+59	-15
ν^3 Cancri	6.0	1.87	- 0.1	24 26.0	13 41.7	- 5 50.7	+0.1248	0.5707	0.1517	+52	-21
ν^4 Cancri	5.7	1.87	0.2	24 26.9	14 18.3	- 5 19.6	+0.0239	0.5707	0.1531	+46	-27
ξ Cancri	6.0	1.64	1.6	22 28.7	4 5 35.1	+ 9 27.3	-0.5645	0.5574	0.1873	+14	-62
79 Cancri	6.3	1.64	1.6	22 25.8	6 0.7	+ 9 51.9	-0.5955	0.5574	0.1889	+12	-63
B. A. C. 3138	6.3	+1.62	- 1.6	+21 43.4	7 26.0	+11 14.2	-0.1408	0.5556	-0.1918	+36	-39

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
B. A. C. 3206	6.3	+1.55	- 1.7	+20 15.0	**4** 12 18.2	- 8 4.0	+0.4195	0.5526	-0.2014	+70	-12
η Leonis	3.3	1.32	2.9	17 17.1	**5** 7 33.5	+10 31.6	-0.7076	0.5363	0.2329	+ 7	-73
42 Leonis	6.0	1.24	3.2	15 30.8	14 23.2	- 6 52.2	-0.4890	0.5310	0.2418	+19	-65
B. A. C. 3579	7.2	1.20	3.3	14 53.3	17 42.7	- 3 39.1	-0.6510	0.5289	0.2457	+10	-74
i Leonis	5.7	1.18	3.3	14 21.1	19 20.0	- 2 4.9	-0.8389	0.5283	0.2475	0	-75
l Leonis	5.3	+1.08	- 3.6	+11 6.6	**6** 3 38.1	+ 5 57.4	+0.8030	0.5223	-0.2557	+90	+ 1
B. A. C. 3837	6.3	0.98	4.2	8 38.7	15 57.5	- 6 6.1	+0.1750	0.5157	0.2651	+54	-33
B. A. C. 4039	7.5	0.82	5.2	+ 4 4.6	**7** 14 39.4	- 8 4.6	-1.1470	0.5067	0.2734	-19	-86
Mars				- 0 48.9	**8** 3 14.5	+ 4 8.6	+0.6024	0.4778	0.2618	+82	-14
				NEW	*MOON.*						
Mercury				-12 53.8	**10** 9 14.5	+ 8 35.1	-0.5351	0.4444	-0.2116	+13	-78
B. A. C. 4896	6.6	+0.79	-10.4	17 20.9	**11** 9 2.8	+ 7 40.7	-1.0900	0.5153	0.2101	-24	-90
10 Libræ	6.5	0.79	10.5	17 55.1	9 10.5	+ 7 48.2	-0.4957	0.5154	0.2099	+11	-75
ι¹ Libræ	5.0	0.86	11.0	19 23.4	19 17.5	- 6 23.4	-0.9319	0.5194	0.1941	-15	-90
ι² Libræ	6.5	0.86	11.0	19 14.8	19 50.2	- 5 51.7	-1.1960	0.5200	0.1932	-36	-90
B. A. C. 5254	5.8	+1.04	-12.0	-23 39.7	**12** 15 27.7	-10 51.4	+0.2058	0.5283	-0.1576	+40	-33
σ Scorpii	3.4	1.19	12.3	25 20.3	**13** 4 18.7	+ 1 34.6	+0.1989	0.5330	0.1317	+37	-33
α Scorpii	1.4	1.24	12.5	26 11.9	8 7.8	+ 5 16.3	+0.6653	0.5344	0.1224	+62	- 7
25 Scorpii	7.0	1.35	12.1	25 20.2	16 13.5	-10 54.2	-1.2110	0.5373	0.1048	-48	-86
B. A. C. 5800	7.5	1.53	11.9	26 51.6	**14** 4 42.2	+ 1 9.2	-0.6483	0.5412	0.0754	-12	-90
A Ophiuchi	4.9	+1.54	-11.7	-26 26.9	5 14.7	+ 1 40.6	-1.1450	0.5413	-0.0741	-45	-90
B. A. C. 5813	6.8	1.54	11.7	26 23.7	5 38.6	+ 2 3.8	-1.2340	0.5414	0.0731	-54	-81
38 Ophiuchi	6.7	1.55	11.6	26 30.9	6 15.6	+ 2 39.5	-1.1450	0.5416	0.0717	-45	-90
43 Ophiuchi	5.8	1.60	11.5	28 2.5	8 48.5	+ 5 7.2	+0.3713	0.5421	0.0654	+40	-23
3 Sagittarii *var.*	4.6	1.77	11.1	27 47.6	19 42.7	- 8 21.0	-0.4711	0.5444	0.0384	- 7	-76
B. A. C. 6127	5.1	+1.90	-10.5	-28 28.3	**15** 4 52.9	+ 0 30.2	+0.0332	0.5453	-0.0153	+17	-42
τ Sagittarii	3.6	2.30	7.3	27 49.7	**16** 7 12.7	+ 1 55.2	-0.2024	0.5443	+0.0514	+ 8	-57
B. A. C. 6628	5.9	2.42	6.3	28 4.4	15 6.0	+ 9 32.4	+0.5489	0.5431	0.0709	+51	-13
B. A. C. 6666	5.8	2.44	5.7	27 12.3	17 32.4	+11 53.7	-0.2277	0.5425	0.0764	+10	-58
ω Sagittarii	5.1	2.59	3.7	26 35.1	**17** 5 20.2	- 0 42.5	+0.1646	0.5396	0.1051	+32	-35
b Sagittarii	4.6	+2.62	- 3.9	-27 27.3	5 50.1	- 0 13.6	+1.1720	0.5393	+0.1061	+63	+32
A Sagittarii	5.3	2.61	3.5	26 29.2	6 46.3	+ 0 40.7	+0.2103	0.5391	0.1082	+35	-32
B. A. C. 7077	6.4	2.79	- 0.7	25 18.3	22 27.1	- 8 10.0	+0.8908	0.5342	0.1434	+65	+ 7
B. A. C. 7237	6.9	2.87	+ 1.3	24 11.0	**18** 7 54.6	+ 0 58.8	+1.1150	0.5310	0.1629	+66	+23
χ Capricorni	5.4	2.89	3.3	21 37.3	15 19.3	+ 8 9.1	-0.4005	0.5289	0.1773	+12	-69
27 Capricorni	6.5	+2.88	+ 3.7	-20 59.1	15 47.8	+ 8 36.6	-1.0070	0.5283	+0.1785	-23	-90
φ Capricorni	5.5	2.91	4.1	21 5.7	18 42.2	+11 25.4	-0.3584	0.5273	0.1840	+14	-66
33 Capricorni	5.7	2.97	4.6	21 18.3	22 47.4	- 8 37.3	+0.6345	0.5264	0.1916	+67	-10
35 Capricorni	6.2	2.98	4.7	21 39.4	**19** 0 16.3	- 7 11.3	+1.2980	0.5259	0.1941	+68	+42
37 Capricorni	6.0	3.00	5.7	20 33.6	3 57.5	- 3 37.1	+0.8461	0.5248	0.2005	+69	+ 2
38 Capricorni	6.9	+3.00	+ 5.6	-20 43.5	3 59.3	- 3 35.4	+1.0290	0.5248	+0.2005	+68	+15
ε Capricorni	4.7	2.99	6.2	19 56.6	5 2.5	- 2 34.2	+0.3996	0.5244	0.2024	+55	-23
κ Capricorni	5.0	3.01	6.8	19 21.1	7 44.9	+ 0 3.1	+0.3184	0.5235	0.2071	+52	-27
B. A. C. 7550	6.3	3.03	6.6	20 6.4	8 1.2	+ 0 18.9	+1.1840	0.5236	0.2074	+70	+27
50 Aquarii	6.1	3.05	11.4	14 4.1	**20** 4 19.8	- 4 0.7	-0.7246	0.5189	0.2379	+ 2	-90
B. A. C. 7835	6.5	+3.06	+11.9	-13 27.6	7 5.6	- 1 20.0	-0.7057	0.5189	+0.2415	+ 3	-90
56 Aquarii	6.3	3.10	11.5	15 7.8	7 13.0	- 1 12.9	+1.0910	0.5182	0.2415	+75	+17
70 Aquarii	6.2	3.08	13.9	11 7.0	16 19.0	+ 7 36.3	-0.8945	0.5171	0.2525	- 6	-90
74 Aquarii	6.0	3.11	14.1	12 10.9	18 47.5	+10 0.3	+0.8565	0.5169	0.2554	+78	+ 1
ψ¹ Aquarii	4.1	3.15	16.0	9 39.9	**21** 5 59.3	- 3 8.6	+1.1340	0.5166	0.2663	+80	+18
χ Aquarii	5.3	+3.13	+16.4	- 8 18.3	6 29.8	- 2 39.0	-0.1478	0.5166	+0.2667	+35	-52
24 Piscium	6.1	3.17	19.4	3 44.7	**22** 0 29.6	- 9 12.3	+0.0413	0.5187	0.2788	+46	-42
27 Piscium	5.1	3.18	19.6	4 8.7	3 21.0	- 6 26.2	+1.2490	0.5192	0.2800	+86	+27
29 Piscium	5.0	3.19	19.9	3 37.1	4 54.3	- 4 55.8	+1.1440	0.5196	0.2807	+86	+19
B. A. C. 8351	8.0	3.19	19.9	- 3 21.4	5 0.8	- 4 49.6	+0.9044	0.5196	0.2807	+87	+ 3
44 Piscium	5.9	+3.20	+21.5	+ 1 21.1	16 29.4	+ 6 17.6	-0.6790	0.5234	+0.2837	+10	-88

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
B. A. C. 221	5.9	+3.23	+22.5	+ 4 44.2	23 3 33.0	- 6 59.8	-0.9813	0.5281	+0.2834	- 6	-85
B. A. C. 274	6.2	3.25	22.9	5 54.8	9 2.6	- 1 40.9	-0.6141	0.5306	0.2823	+13	-80
73 Piscium	5.9	3.27	22.9	5 5.4	11 26.1	+ 0 38.0	+0.8896	0.5323	0.2815	+90	+ 3
ζ Piscium	4.8	3.28	23.2	7 1.0	15 34.7	+ 4 38.5	+0.1076	0.5344	0.2798	+50	-37
88 Piscium	6.2	3.29	23.1	6 26.1	16 2.8	+ 5 5.7	+0.8233	0.5344	0.2780	+90	0
B. A. C. 609	6.0	+3.37	+23.2	+11 46.9	24 12 22.8	+ 0 44.4	+0.9931	0.5492	+0.2636	+90	+13
19 Arietis	5.7	3.39	23.2	14 47.1	18 20.0	+ 6 29.1	-0.4591	0.5531	0.2564	+20	-64
27 Arietis	6.3	3.44	22.7	17 14.2	25 1 59.9	-10 7.5	-0.9757	0.5594	0.2456	- 9	-73
36 Arietis	6.5	3.47	22.3	17 19.1	7 39.6	- 4 40.2	+0.3099	0.5648	0.2362	+62	-21
40 Arietis	6.3	3.48	22.1	17 50.7	9 24.8	- 2 58.9	+0.1972	0.5666	0.2333	+55	-26
π Arietis	5.7	+3.48	+22.2	+17 1.5	9 44.4	- 2 40.0	+1.0880	0.5666	+0.2326	+90	+24
ρ² Arietis	6.0	3.49	21.9	17 54.3	12 25.7	- 0 4.8	+0.8328	0.5692	0.2278	+90	+ 8
ρ³ Arietis	6.0	3.49	21.9	17 36.2	12 40.6	+ 0 9.6	+1.1890	0.5692	0.2273	+90	+33
δ Arietis	4.0	3.52	21.4	19 19.7	18 51.8	+ 6 6.6	+0.8433	0.5741	0.2148	+90	+11
ζ Arietis	4.7	3.53	20.9	20 39.2	20 6.4	+ 7 18.3	-0.2067	0.5749	0.2121	+33	-44
τ¹ Arietis	5.0	+3.55	+20.5	+20 46.0	22 42.6	+ 9 48.6	+0.2265	0.5776	+0.2065	+58	-22
τ² Arietis	5.3	3.54	20.5	20 21.7	23 19.7	+10 24.2	+0.7554	0.5777	0.2051	+90	+ 6
65 Arietis	6.0	3.54	20.5	20 25.7	23 59.8	+11 2.7	+0.8249	0.5786	0.2038	+90	+10
B. A. C. 1055	6.8	3.56	20.4	21 40.1	26 0 1.9	+11 4.7	-0.3968	0.5786	0.2034	+23	-53
66 Arietis	6.6	3.57	20.0	22 26.4	1 33.5	-11 27.3	-0.8543	0.5801	0.1999	- 3	-68
9 Tauri	7.0	+3.60	+19.4	+22 51.7	4 55.0	- 8 13.7	-0.6146	0.5850	+0.1920	+11	-64
g Pleiadum	6.3	3.62	18.8	23 57.4	7 57.7	- 5 18.2	-1.1260	0.5851	0.1844	-24	-66
17 Tauri	4.3	3.62	18.8	23 46.9	7 59.5	- 5 16.5	-0.9466	0.5851	0.1842	-10	-66
20 Tauri	5.0	3.63	18.7	24 2.3	8 21.5	- 4 55.4	-1.1330	0.5851	0.1833	-25	-66
22 Tauri	7.0	3.63	18.7	24 11.9	8 26.6	- 4 50.5	-1.2770	0.5859	0.1831	-42	-66
23 Tauri	4.7	+3.62	+18.8	+23 37.2	8 33.6	- 4 43.8	-0.6857	0.5859	+0.1829	+ 6	-66
η Tauri	3.0	3.62	18.7	23 46.7	9 0.4	- 4 16.0	-0.7584	0.5860	0.1818	+ 2	-63
B. A. C. 1170	6.3	3.61	18.7	23 5.8	9 21.1	- 3 58.1	-0.0215	0.5860	0.1807	+43	-31
B. A. C. 1171	7.8	3.62	18.6	24 1.3	9 23.8	- 3 56.5	-0.9285	0.5866	0.1803	- 9	-66
26 Tauri	7.0	3.61	18.6	23 32.0	9 34.6	- 3 45.2	-0.4081	0.5866	0.1803	+22	-52
27 Tauri	4.0	+3.62	+18.5	+23 43.8	9 39.5	- 3 40.5	-0.5933	0.5866	+0.1801	+12	-62
28 Tauri	6.2	3.62	18.5	23 48.9	9 40.1	- 3 39.9	-0.6741	0.5868	0.1799	+ 7	-66
33 Tauri	6.3	3.60	18.2	22 52.2	12 43.4	- 0 44.0	+0.7997	0.5891	0.1718	+90	+12
B. A. C. 1238	6.3	3.60	18.1	22 54.3	14 12.7	+ 0 41.6	+1.0170	0.5899	0.1678	+90	+27
36 Tauri	6.0	3.62	17.6	23 48.9	15 30.3	+ 1 56.0	+0.3305	0.5910	0.1644	+64	-12
χ Tauri	5.7	+3.64	+16.3	+25 22.9	22 22.6	+ 8 31.3	-0.1603	0.5957	+0.1445	+35	-35
B. A. C. 1347	7.3	3.61	16.4	24 9.7	22 44.4	+ 8 52.3	+1.1030	0.5959	0.1435	+90	+35
62 Tauri	6.0	3.61	16.4	24 3.4	22 55.8	+ 9 3.2	+1.2340	0.5959	0.1431	+90	+48
W. iv, 1421	6.0	3.65	12.1	27 53.9	27 15 45.5	+ 1 10.2	-0.6127	0.6039	0.0897	+10	-56
22 Aurigæ	7.0	3.66	10.9	28 50.5	20 42.8	+ 5 54.7	-1.1490	0.6056	0.0729	-31	-61
β Tauri	2.0	+3.64	+10.7	+28 31.2	21 46.5	+ 6 55.7	-0.7526	0.6060	+0.0693	+ 1	-61
B. A. C. 1772	6.3	3.64	9.4	29 9.3	28 2 28.7	+11 25.7	-1.0970	0.6067	0.0531	-26	-61
136 Tauri	5 3	3.56	8.6	27 35.3	7 34.9	- 7 41.4	+0.6896	0.6068	+0.0356	+90	+19
49 Aurigæ	5.7	3.45	5.0	28 6.4	22 45.4	+ 6 49.7	+0.3122	0.6042	-0.0172	+63	+ 1
53 Aurigæ	6.0	3.46	4.3	29 4.6	23 54.0	+ 7 55.4	-0.6808	0.6039	0.0210	+ 5	-57
59 Aurigæ	6.0	+3.43	+ 4.6	+28 21.5	29 0 20.4	+ 8 20.7	+0.0284	0.6039	-0.0227	+46	-14
25 Geminorum	6.5	3.41	4.4	28 17.8	0 59.8	+ 8 58.3	+0.0735	0.6036	0.0249	+49	-12
28 Geminorum	6.0	3.41	3.8	29 4.8	2 13.9	+10 9.3	-0.7437	0.6032	0.0291	+ 1	-61
W. vi, 1656	8.2	3.30	2.8	26 59.6	9 17.5	- 7 5.2	+1.0620	0.5996	0.0528	+90	+41
47 Geminorum	6.0	3.26	2.1	27 1.9	12 6.1	- 4 23.7	+0.8622	0.5980	0.0621	+90	+26
53 Geminorum	6.3	+3.26	+ 1.5	+28 5.0	13 47.2	- 2 46.9	-0.3054	0.5967	-0.0676	+27	-36
59 Geminorum	6.9	3.22	0.8	27 50.7	17 1.0	+ 0 18.9	-0.3008	0.5947	0.0778	+27	-37
ι Geminorum	4.0	3.21	0.6	28 0.6	17 27.7	+ 0 44.5	-0.5025	0.5941	0.0792	+16	-48
b¹ Geminorum	5.3	3.21	0.3	28 20.3	18 49.0	+ 2 2.4	-0.9424	0.5934	0.0834	-12	-62
b² Geminorum	6,3	3.20	0.3	28 8.2	18 59.9	+ 2 12.8	-0.7553	0.5934	0.0840	+ 1	-62
B. A. C. 2472	8.0	+3.19	+ 0.2	+28 7.9	19 19.1	+ 2 31.3	-0.7771	0.5934	-0.0851	- 1	-62

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	′	° ′	d h m	h m				°	°
OCTOBER.											
ν Geminorum	4.3	+3.14	0.0	+27 8.0	**29** 21 20.0	+ 4 27.2	+0.0539	0.5920	−0.0913	+47	−19
c Geminorum	6.0	3.08	− 0.3	26 2.3	**30** 0 28.9	+ 7 28.3	+0.8582	0.5888	0.1008	+90	+23
φ Geminorum	5.0	3.05	1.4	27 2.5	4 5.0	+10 55.6	−0.5404	0.5865	0.1128	+14	−53
ω^1 Cancri	6.0	2.98	1.5	25 41.1	6 59.8	−10 16.6	+0.4987	0.5839	0.1197	+78	+ 1
ω^2 Cancri	6.3	2.97	1.5	25 23.0	7 18.9	− 9 58.3	+0.7658	0.5839	0.1207	+90	+15
ψ^1 Cancri	6.8	+2.95	− 2.4	+26 9.5	10 38.2	− 6 46.7	−0.4368	0.5803	−0.1298	+20	−49
ψ^2 Cancri	5.7	2.93	2.3	25 49.9	10 44.3	− 6 41.0	−0.1168	0.5802	0.1302	+38	−32
λ Cancri	5.7	2.84	2.7	24 21.5	14 45.9	− 2 48.9	+0.8347	0.5771	0.1410	+90	+17
ν^1 Cancri *mult.*	6.0	2.82	3.3	24 53.0	17 13.4	− 0 27.1	−0.0526	0.5749	0.1472	+41	−30
ν^2 Cancri	5.8	2.80	3.3	24 29.9	18 1.1	+ 0 18.7	+0.2209	0.5741	0.1493	+57	−16
ν^3 Cancri	6.0	+2.78	− 3.5	+24 26.4	19 11.7	+ 1 26.6	+0.1020	0.5731	−0.1512	+50	−23
ν^4 Cancri	5.7	2.78	3.6	24 26.8	19 48.1	+ 2 1.6	+0.0051	0.5722	0.1537	+44	−28
ξ Cancri	5.0	2.52	5.6	22 28.6	**31** 11 0.3	− 7 20.2	−0.5888	0.5577	0.1881	+12	−63
79 Cancri	6.3	2.51	5.7	22 25.7	11 25.8	− 6 55.6	−0.6198	0.5567	0.1888	+11	−65
B. A. C. 3138	6.3	2.47	5.7	21 43.3	12 30.9	− 5 33.6	−0.1628	0.5558	0.1917	+35	−41
B. A. C. 3206	6.3	+2.37	− 6.0	+20 14.9	17 43.0	− 0 51.9	+0.3968	0.5508	−0.2011	+68	−13
NOVEMBER.											
η Leonis	3.3	+2.07	− 7.5	+17 17.0	**1** 13 2.6	− 6 11.5	−0.7343	0.5335	−0.2316	+ 5	−72
42 Leonis	6.0	1.96	7.9	15 30.8	19 55.4	+ 0 27.4	−0.5178	0.5281	0.2394	+16	−66
B. A. C. 3579	7.2	+1.92	− 8.0	+14 53.3	23 16.7	+ 3 42.1	−0.6784	0.5257	−0.2444	+ 9	−75
i Leonis	5.7	1.89	8.2	14 41.1	**2** 0 55.0	+ 5 17.4	−0.8674	0.5243	0.2458	− 2	−75
l Leonis	5.3	1.75	8.1	11 6.6	9 18.6	−10 34.7	+0.7778	0.5188	0.2536	+90	− 1
B. A. C. 3837	6.3	1.60	8.5	8 38.7	21 47.3	+ 1 31.2	+0.1494	0.5109	0.2623	+52	−35
B. A. C. 4039	7.5	1.34	9.1	4 4.6	**3** 20 49.4	− 0 7.2	−1.1730	0.5020	0.2704	−21	−86
10 Virginis	6.4	+1.28	− 9.0	+ 2 29.7	**4** 2 54.5	+ 5 47.4	−1.1350	0.5006	−0.2708	−18	−88
13 Virginis	6.1	1.23	8.8	− 0 11.4	7 41.9	+10 26.6	+0.4400	0.4997	0.2708	+70	−22
η Virginis	4.0	1.22	8.9	0 4.5	8 21.9	+11 5.5	+0.1301	0.4997	0.2707	+51	−38
Mars				8 14.3	**5** 22 48.9	+ 0 27.2	−1.2770	0.4739	0.2436	−32	−90
k Virginis	5.8	1.00	9.4	9 37.0	23 28.7	+ 1 5.9	+0.0470	0.5016	0.2544	+44	−42
86 Virginis	5.9	+1.00	− 9.8	−11 53.6	**6** 6 20.2	+ 7 45.6	+0.7929	0.5027	−0.2487	+70	− 3
				NEW	*MOON.*						
19 Scorpii	5.1	1.12	10.9	23 54.9	**9** 11 17.3	+10 21.3	−1.2910	0.5346	0.1313	−56	−74
σ Scorpii	3.4	1.12	11.1	25 20.3	11 31.0	+10 34.6	+0.2527	0.5350	0.1308	+40	−30
α Scorpii	1.4	+1.15	−11.1	−26 11.9	15 19.9	− 9 44.0	+0.7218	0.5362	−0.1226	+64	− 4
25 Scorpii	7.0	1.21	10.9	25 20.2	23 24.9	− 1 55.2	−1.1520	0.5395	0.1044	−42	−90
B. A. C. 5800	7.5	1.34	10.7	26 51.6	**10** 11 52.8	+10 7.5	−0.5829	0.5430	0.0769	−10	−86
A Ophiuchi	4.9	1.34	10.6	26 26.9	12 25.4	+10 38.9	−1.0790	0.5435	0.0736	−39	−90
B. A. C. 5813	6.8	1.34	10.6	26 23.7	12 49.2	+11 2.0	−1.1680	0.5436	0.0727	−47	−90
38 Ophiuchi	6.7	+1.35	−10.6	−26 30.9	13 26.2	+11 37.7	−1.0810	0.5436	−0.0712	−40	−90
43 Ophiuchi	5.8	1.39	10.7	28 2.5	15 58.9	− 9 54.8	+0.4423	0.5437	0.0651	+44	−19
3 Sagittarii *var.*	4.6	1.50	10.1	27 47.6	**11** 2 53.0	+ 0 36.9	−0.3964	0.5455	0.0380	− 3	−70
B. A. C. 6127	5.1	1.60	9.7	28 28.3	12 3.8	+ 9 28.7	+0.1148	0.5462	−0.0148	+21	−38
τ Sagittarii	3.6	1.93	7.1	27 49.7	**12** 14 29.8	+11 0.2	−0.1073	0.5436	+0.0518	+13	−51
B. A. C. 6628	5.9	+2.04	− 6.2	−28 4.4	22 26.7	− 5 19.2	+0.6519	0.5416	+0.0711	+58	− 7
B. A. C. 6666	5.8	2.05	5.8	27 12.3	**13** 0 54.3	− 2 55.8	−0.1274	0.5408	0.0770	+16	−52
ω Sagittarii	5.1	2.20	4.1	26 35.1	12 49.6	+ 8 34.5	+0.2726	0.5368	0.1048	+38	−29
b Sagittarii	4.6	2.23	4.3	27 27.3	13 19.9	+ 9 3.8	+1.2870	0.5368	0.1060	+63	+53
B. A. C. 7077	6.4	2.38	− 1.5	25 18.3	**14** 6 11.3	+ 1 21.9	+1.0140	0.5304	0.1426	+65	+16
B. A. C. 7237	6.9	+2.46	0.0	−24 11.0	15 48.9	+10 40.9	+1.2430	0.5264	+0.1617	+66	+37
χ Capricorni	5.4	2.49	+ 2.0	21 37.4	23 22.5	− 6 0.0	−0.2842	0.5230	0.1760	+17	−61
27 Capricorni	6.5	2.48	2.3	20 59.2	23 51.6	− 5 31.8	−0.8941	0.5230	0.1768	−15	−90
ο Capricorni	5.5	2.52	2.7	21 5.8	**15** 2 49.7	− 2 39.3	−0.2418	0.5217	0.1821	+20	−58
33 Capricorni	5.7	2.56	3.1	21 18.3	7 0.4	+ 1 23.5	+0.7623	0.5201	0.1892	+66	− 3
37 Capricorni	6.0	+2.60	+ 4.0	−20 33.6	12 17.6	+ 6 30.8	+0.9743	0.5186	+0.1984	+69	+11

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x′*	*y′*	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
38 Capricorni	6.9	+2.60	+ 3.9	−20 43.5	15 12 19.3	+ 6 32.4	+1.1590	0.5186	+0 1984	+69	+25
ε Capricorni	4.7	2.60	4.6	19 56.6	13 24.2	+ 7 35.3	+0.5249	0.5176	0.2000	+63	−16
κ Capricorni	5.0	2.62	5.1	19 21.1	16 10.4	+10 16.4	+0 4429	0.5170	0.2045	+59	−21
B. A. C. 7550	6.3	2.63	5.0	20 6.4	16 27.0	+10 32.5	+1.3180	0.5170	0.2050	+70	+43
50 Aquarii	6.1	2.73	9.6	14 4.2	16 13 17.0	+ 6 44.5	−0.6095	0.5113	0.2344	+ 8	−84
B. A. C. 7835	6.5	+2.76	+10.2	−13 27.6	16 7.3	+ 9 29.6	−0.5926	0.5106	+0.2379	+10	−82
70 Aquarii	6.2	2.79	12.2	11 7.0	17 1 35.7	− 5 19.1	−0.7859	0.5092	0.2485	0	−90
74 Aquarii	6.0	2.83	12 3	12 10.9	4 8.3	− 2 50.9	+0.9831	0.5092	0.2512	+78	+ 9
χ Aquarii	5.3	2.88	14.8	8 18.4	16 9.7	+ 8 49.0	−0.0334	0.5090	0.2620	+41	−46
24 Piscium	6.1	2.98	17.9	3 44.7	18 10 37.1	+ 2 43.3	+0.1423	0.5116	0.2743	+51	−37
29 Piscium	5.1	+3.02	+18.3	− 3 37.1	15 8.1	+ 7 6.1	+1.2520	0.5125	+0.2762	+86	+28
B. A. C. 8351	8.0	3.02	18.4	− 3 21.4	15 14.7	+ 7 12.5	+1.0120	0.5125	0.2764	+87	+10
44 Piscium	5.9	3.09	20.6	+ 1 21.1	19 2 58.2	− 5 25.4	−0.5970	0.5170	0.2796	+14	−81
B. A. C. 221	5.9	3.16	22.2	4 44.2	14 13.9	+ 5 29.2	−0.9093	0.5226	0.2798	− 3	−85
B. A. C. 274	6.2	3.21	22.6	5 54.8	19 48.6	+10 53.4	−0.5495	0.5261	0.2789	+15	−76
73 Piscium	5.9	+3.24	+22.4	+ 5 5.4	22 14.0	−10 45.8	+0.9634	0.5274	+0.2783	+90	+ 8
ζ Piscium	5.9	3.27	22.9	7 1.0	20 2 25.8	− 6 42.2	+0.1706	0.5310	0.2767	+53	−34
88 Piscium	6.2	3.28	22.8	6 26.1	2 54.2	− 6 14.7	+0.8896	0.5310	0.2766	+90	+ 4
B. A. C. 609	6.0	3.49	23.8	11 46.9	23 22.6	−10 27.5	+1.0300	0.5501	0.2617	+90	+16
19 Arietis	5.7	3.56	23.9	14 47.1	21 5 20.1	− 4 42.5	−0.4320	0.5527	0.2551	+22	−62
27 Arietis	6.3	+3.64	+23.8	+17 14.2	12 58.9	+ 2 39.7	−0.9568	0.5607	+0.2446	− 8	−73
36 Arietis	6.5	3.73	23.4	17 19.1	18 36.6	+ 8 5.0	+0.3171	0.5669	0.2368	+63	−20
40 Arietis	6.3	3.75	23.3	17 50.7	20 21.0	+ 9 45.5	+0.2030	0.5678	0.2328	+55	−26
π Arietis	5.7	3.74	23.2	17 1.5	20 40.5	+10 4.3	+1.0880	0.5689	0 2323	+90	+24
ρ² Arietis	6.0	3.77	23.0	17 54.3	23 20.3	−11 22.0	+0.8307	0.5710	0.2278	+90	+ 8
ζ Arietis	4.7	+3.88	+22.4	+20 39.3	22 6 56.0	− 4 3.8	−0.2152	0.5793	+0.2122	+34	−46
τ¹ Arietis	5.0	3.90	22.0	20 46.1	9 30.0	− 1 35.8	+0.2111	0.5819	0.2065	+56	−22
τ² Arietis	5.3	3.90	21.8	20 21.9	10 6.6	− 1 0.7	+0.7336	0.5822	0.2052	+90	+ 5
65 Arietis	6.0	3.90	21.8	20 25.8	10 46.1	− 0 22.8	+0.8041	0.5832	0.2036	+90	+ 9
B. A. C. 1055	6.8	3.93	21.9	21 40.2	10 48.3	− 0 20.7	−0.4087	0.5832	0.2036	+22	−54
66 Arietis	6.0	+3.95	+21.7	+22 26.4	12 18.0	+ 1 5.4	−0.8662	0.5842	+0.2001	− 4	−68
9 Tauri	7.0	4.00	21.1	22 51.7	15 36.7	+ 4 16.2	−0.6308	0.5882	0.1913	+10	−65
q Pleiadum	6.3	4.05	20.5	23 57.7	18 36.1	+ 7 8.4	−1.1410	0.5912	0.1847	−26	−66
17 Tauri	4.3	4.05	20.5	23 46.9	18 37.9	+ 7 10.1	−0.9627	0.5912	0.1847	−11	−66
20 Tauri	5.0	4.06	20.5	24 2.5	18 59.5	+ 7 30.7	−1.1490	0.5912	0.1837	−26	−66
23 Tauri	4.7	+4.05	+20.5	+23 37.2	19 11.3	+ 7 42.1	−0.7023	0.5912	+0.1832	+ 4	−66
η Tauri	3.0	4.05	20.4	23 46.7	19 37.7	+ 8 7.5	−0.7775	0.5919	0.1821	+ 1	−66
B. A. C. 1170	6.3	4.04	20.3	23 5.8	19 58.0	+ 8 26.9	−0.0475	0.5921	0.1812	+41	−33
B. A. C. 1171	7.8	4.06	20.3	24 1.3	20 0.7	+ 8 29.5	−0.9477	0.5923	0.1810	−10	−66
26 Tauri	7.0	4.06	20.3	23 32.0	20 11.3	+ 8 39.6	−0.4353	0.5923	0.1805	+20	−53
27 Tauri	4.0	+4.06	+20.3	+23 43.9	20 16.0	+ 8 44.1	−0.6170	0.5923	+0.1803	+10	−63
28 Tauri	6.2	4.06	20.3	23 48.9	20 16.5	+ 8 54.6	−0.6972	0.5923	0.1803	+ 6	−66
B. A. C. 1189	6.0	4.03	20.2	21 55.5	20 34.9	+ 9 2.3	+1.2140	0.5932	0.1796	+90	+42
33 Tauri	6.3	4.06	19.7	22 52.2	23 16.4	+11 37.1	+0.7607	0.5950	0.1724	+90	+10
B. A. C. 1238	6.3	4.07	19.5	22 54.3	23 0 43.8	−10 59.1	+0.9731	0.5969	0.1682	+90	+24
36 Tauri	6.0	+4.10	+19.5	+23 48.9	1 59.7	− 9 46.4	+0.2910	0.5975	+0.1647	+61	−13
χ Tauri	5.7	4.18	17.9	25 22.9	8 41.9	− 3 21.2	−0.2058	0.6036	0.1449	+33	−37
B. A. C. 1347	7.3	4.15	17.9	24 9.7	9 4.0	− 2 59.9	+1.0430	0.6036	0.1441	+90	+31
62 Tauri	6.0	4.14	17.8	24 3.4	9 15.1	− 2 49.2	+1.1730	0.6036	0.1434	+90	+42
W. iv, 1421	6.0	4.34	13.4	27 53.9	24 1 37.5	−11 9.7	−0.6708	0.6127	0.0898	+ 6	−60
β Tauri	2.0	+4.36	+11.8	+28 31.2	7 27.4	− 5 35.4	−0.8166	0.6167	+0.0692	− 3	−61
B. A. C. 1772	6.3	4.39	10.3	29 9.4	12 0.7	− 1 14.8	−1.1610	0.6176	0.0529	−30	−61
136 Tauri	5.3	4.33	9.0	27 35.3	16 56.8	+ 3 28.5	+0.5920	0.6183	0.0348	+88	+14
κ Aurigæ	4.7	4.38	6.5	29 32.3	25 0 37.4	+10 48.3	−1.1620	0.6179	+0.0067	−33	−60
49 Aurigæ	5.7	4.31	4.6	28 6.4	7 36.2	− 6 31.6	+0.2018	0.6162	−0.0181	+57	− 5
53 Aurigæ	6.0	+4.33	+ 3.9	+29 4.6	8 42.3	− 5 28.4	−0.7764	0.6159	−0.0227	− 1	−61

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
25 Geminorum	6.5	+4.30	+ 3.8	+28 17.8	25 9 45.9	− 4 27.6	−0.0328	0.6155	−0.0266	+42	−18
28 Geminorum	6.0	4.31	3.3	29 4.8	10 57.3	− 3 19.4	−0.8410	0.6151	0.0307	− 5	−61
W. vi, 1656	8.2	4.20	1.7	26 59.6	17 45.9	+ 3 11.1	+0.9253	0.6113	0.0548	+90	−31
47 Geminorum	6.0	4.17	0.9	27 1.9	20 28.6	+ 5 46.6	+0.7269	0.6095	0.0643	+90	+19
53 Geminorum	6.3	4.21	+ 0.2	28 5.0	22 6.1	+ 7 19.8	−0.4223	0.6089	0.0698	+20	−43
59 Geminorum	6.9	+4.16	− 0.7	+27 50.7	26 1 13.0	+10 18.7	−0.4178	0.6067	−0.0802	+23	−43
ι Geminorum	4.0	4.17	0.9	28 0.9	1 38.8	+10 43.4	−0.6195	0.6061	0.0818	+ 9	−56
b^1 Geminorum	5.3	4.16	1.3	28 20.3	2 57.2	+11 58.4	−1.0560	0.6053	0.0860	−21	−62
b^2 Geminorum	6.3	4.13	1.3	28 8.2	3 7.7	−11 51.6	−0.8694	0.6050	0.0866	− 7	−62
B. A. C. 2472	8.0	4.15	1.4	28 7.9	3 26.3	−11 33.7	−0.8910	0.6046	0.0876	− 8	−62
υ Geminorum	4.3	+4.10	− 1.7	+27 8.0	5 22.9	− 9 42.1	−0.0778	0.6029	−0.0940	+40	−26
c Geminorum	6.0	4.02	2.4	26 2.3	8 25.3	− 6 46.5	+0.7109	0.6003	0.1035	+90	+14
φ Geminorum	5.0	4.01	3.6	27 2.4	11 53.8	− 3 27.8	−0.6637	0.5974	0.1144	+ 7	−61
ω^1 Cancri	6.0	3.93	4.1	25 41.0	14 42.7	− 0 46.0	+0.3524	0.5947	0.1228	+66	− 7
ω^2 Cancri	6.3	3.92	4.1	25 22.9	15 1.2	− 0 28.3	+0.6151	0.5947	0.1237	+89	+ 7
ψ^1 Cancri	6.8	+3.91	− 5.1	+26 9.4	18 13.8	+ 2 36.4	−0.5694	0.5917	−0.1326	+12	−57
ψ^2 Cancri	5.7	3.90	5.1	25 49.8	18 19.7	+ 2 42.1	−0.2564	0.5917	0.1330	+30	−39
λ Cancri	5.7	3.80	5.7	24 21.4	22 13.6	+ 6 26.5	+0.6774	0.5878	0.1442	+90	+ 8
ν^1 Cancri *mult.*	6.0	3.79	6.5	24 53.0	27 0 36.1	+ 8 43.2	−0.2004	0.5846	0.1505	+33	−38
ν^2 Cancri	5.8	3.77	6.5	24 29.9	1 22.1	+ 9 27.4	+0.0685	0.5834	0.1526	+48	−24
ν^3 Cancri	6.0	+3.75	− 6.7	+24 26.4	2 30.4	+10 33.0	−0.0485	0.5824	−0.1555	+41	−30
ν^4 Cancri	5.7	3.74	6.9	24 26.8	3 5.6	+11 6.8	−0.1472	0.5823	0.1572	+36	−36
ξ Cancri	5.0	3.50	9.8	22 28.5	17 50.6	+ 1 17.7	−0.7422	0.5657	0.1913	+ 3	−67
79 Cancri	6.3	3.49	9.9	22 25.6	18 15.4	+ 1 41.5	−0.7727	0.5657	0.1913	+ 2	−68
B. A. C. 3138	6.3	3.45	10.0	21 43.2	19 38.2	+ 3 1.3	−0.3243	0.5636	0.1950	+27	−49
B. A. C. 3206	6.3	+3.34	−10.4	+20 14.8	28 0 22.3	+ 7 34.9	+0.2252	0.5571	−0.2042	+57	−22
η Leonis	3.3	2.99	12.9	17 16.9	19 15.2	+ 1 48.1	−0.9031	0.5395	0.2341	− 5	−73
37 Leonis	5.7	2.87	12.5	14 15.5	23 36.2	+ 6 0.5	+1.1800	0.5346	0.2394	+90	+28
42 Leonis	6.0	2.87	13.3	15 30.7	29 2 0.3	+ 8 19.8	−0.6915	0.5325	0.2422	+ 8	−74
B. A. C. 3579	7.2	2.81	13.5	14 53.2	5 18.2	+11 31.2	−0.8515	0.5308	0.2458	− 1	−75
i Leonis	5.7	+2.78	−13.7	+14 41.0	6 55.0	−10 55.1	−1.0410	0.5282	−0.2473	−13	−75
l Leonis	5.3	2.63	13.5	11 6.5	15 11.1	− 2 54.5	+0.5913	0.5217	0.2548	+82	−11
B. A. C. 3837	6.3	2.45	14.0	8 38.6	30 3 32.1	+ 9 3.3	−0.0314	0.5125	0.2627	+43	−44
σ Leonis	4.1	2.38	13.7	6 36.7	7 9.8	−11 25.5	+1.1470	0.5105	−0.2644	+90	+21

DECEMBER.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
B. A. C. 4039	7.5	+2.13	−14.5	+ 4 4.5	1 2 27.6	+ 7 16.4	−1.3390	0.5012	−0.2693	−37	−86
10 Virginis	6.4	2.07	14.5	+ 2 29.7	8 32.4	−10 49.3	−1.3010	0.4982	0.2695	−32	−88
13 Virginis	6.1	1.99	14.0	− 0 11.8	13 20.2	− 6 9.7	+0.2741	0.4955	0.2675	+60	−30
η Virginis	4.0	1.99	14.1	0 4.5	14 0.3	− 5 30.7	−0.0336	0.4953	0.2674	+42	−47
h Virginis	5.8	1.63	13.1	9 37.0	3 5 18.8	+ 8 43.4	−0.0688	0.4984	0.2517	+38	−48
86 Virginis	5.9	+1.58	−12.7	−11 53.6	12 13.5	− 8 33.7	+0.6896	0.5000	−0.2460	+79	− 8
B. A. C. 4896	6.6	1.42	12.2	17 20.9	4 22 21.5	+ 0 34.5	−1.1240	0.5128	0.2067	−27	−90
10 Libræ	6.5	1.42	12.1	17 55.1	22 29.2	+ 0 42.0	−0.5242	0.5128	0.2065	+ 9	−77
ι^1 Libræ	5.0	1.41	11.9	19 23.4	5 8 42.1	−13 23.7	−0.9371	0.5180	0.1911	−16	−90
ι^2 Libræ	6.5	1.41	11.9	19 14.8	9 15.1	+11 8.3	−1.2000	0.5184	0.1902	−36	−90
42 Libræ	5.7	+1.40	−11.4	−23 28.4	22 25.1	− 0 6.4	+1.1110	0.5255	−0.1670	+67	+23
B. A. C. 5253	5.8	1.40	11.2	24 13.0	6 4 58.2	+ 6 14.3	+0.8726	0.5283	0.1553	+66	+ 5
				NEW	*MOON.*						
B. A. C. 6127	5.1	1.65	8.5	28 28.2	8 18 27.1	− 6 20.5	+0.1465	0.5479	−0.0132	+23	−36
φ Sagittarii	3.7	+1.70	− 7.0	−27 6.1	9 11 18.1	+ 9 55.6	−1.1640	0.5470	+0.0295	−50	−90
τ Sagittarii	3.6	1.84	6.2	27 49.7	20 52.3	− 4 49.9	+0.0408	0.5451	0.0534	+21	−42
B. A. C. 6628	5.9	1.91	5.5	28 4.4	10 4 49.6	+ 2 51.2	+0.8164	0.5430	0.0727	+62	+ 4
B. A. C. 6666	5.8	1.96	5.1	27 12.3	7 17.4	+ 5 13.9	+0.0370	0.5424	0.0786	+23	−43
ω Sagittarii	5.1	2.01	3.6	26 35.1	19 14.3	− 7 13.2	+0.4563	0.5378	0.1064	+49	−19
A Sagittarii	4.6	+2.02	− 3.4	−26 29.2	20 41.8	− 5 48.6	+0.5043	0.5371	+0.1095	+52	−16

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0. Δα	Red'ns from 1893.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
B. A. C. 7077	6.4	+2.13	− 1.4	−25 18.3	11 12 41.1	− 4 20.8	+1.2230	0.5301	+0.1436	+65	+36
B. A. C. 7325	6.9	2.19	+ 1.7	20 36.5	12 5 7.2	+ 1 34.0	−1.3340	0.5235	0.1748	−58	−80
χ Capricorni	5.4	2.21	1.6	21 37.4	6 1.4	+ 2 26.5	−0.0568	0.5218	0.1764	+29	−47
26 Capricorni	7.0	2.20	1.8	20 37.5	6 22.9	+ 2 47.2	−1.0920	0.5217	0.1771	−29	−90
27 Capricorni	6.5	2.21	1.8	20 59.2	6 30.9	+ 2 54.9	−0.6711	0.5216	0.1773	− 3	−90
φ Capricorni	5.5	+2.24	+ 2.1	−21 5.8	9 31.1	+ 5 49.6	−0.0073	0.5199	+0.1824	+32	−44
33 Capricorni	5.7	2.27	2.5	21 18.4	13 44.8	+ 9 55.6	+1.0080	0.5180	0.1895	+69	+14
37 Capricorni	6.0	2.32	3.4	20 33.6	19 6.6	− 8 52.6	+1.2270	0.5157	0.1981	+69	+32
ε Capricorni	4.7	2.31	3.7	19 56.6	20 14.1	− 7 47.2	+0.7757	0.5156	0.1997	+65	− 2
κ Capricorni	5.0	2.32	4.1	19 21.1	23 2.8	− 5 3.6	+0.6949	0.5140	0.2041	+71	− 7
29 Aquarii (*mean.*)	6.5	+2.38	+ 5.8	−17 28.7	13 9 8.8	+ 4 44.1	+0.7811	0.5100	+0.2182	+67	− 2
39 Aquarii	6.4	2.38	7.3	14 43.1	14 19.6	+ 9 45.7	−1.0750	0.5083	0.2249	−21	−90
45 Aquarii	6.3	2.40	7.8	13 50.3	18 44.4	− 9 55.4	−1.2520	0.5063	0.2304	−35	−90
50 Aquarii	6.1	2.42	8.1	14 4.2	20 33.6	− 8 11.3	−0.3508	0.5060	0.2325	+22	−64
B. A. C. 7835	6.5	2.44	8.6	13 27.7	23 27.6	− 5 22.2	−0.3303	0.5054	0.2357	+23	−63
70 Aquarii	6.2	+2.43	+10.5	−11 7.0	14 9 9.9	+ 4 2.9	−0.5264	0.5034	+0.2458	+14	−76
74 Aquarii	6.0	2.53	10.5	12 10.9	11 46.5	+ 6 35.0	+1.2670	0.5027	0.2483	+78	+31
h^3 Aquarii	7.0	2.54	12.4	8 30.7	18 20.1	−11 2.8	−1.0300	0.5020	0.2537	−13	−90
h^4 Aquarii	8.0	2.55	12.5	8 16.1	19 2.0	−10 22.1	−1.1140	0.5019	0.2545	−19	−90
χ Aquarii	5.3	2.60	12.9	8 18.3	15 0 7.9	− 5 25.1	+0.2353	0.5017	0.2584	+55	−32
24 Piscium	6.1	+2.72	+16.2	− 3 44.7	19 9.7	−10 56.2	+0.4124	0.5032	+0.2693	+67	−23
B. A. C. 8351	8.0	2.77	16.6	− 3 21.4	23 56.4	− 6 17.9	+1.2910	0.5040	0.2710	+87	+32
44 Piscium	5.9	2.86	19.0	+ 1 21.1	16 12 3.4	+ 5 27.7	−0.3538	0.5078	0.2736	+26	−64
B. A. C. 221	5.9	2.96	20.7	4 44.1	23 42.0	− 7 14.7	−0.6829	0.5136	0.2737	+ 9	−85
B. A. C. 274	6.2	3.02	21.3	5 54.7	17 5 27.9	− 1 39.3	−0.3238	0.5170	0.2726	+28	−61
73 Piscium	5.9	+3.06	+21.1	+ 5 5.3	7 58.2	+ 0 46.4	+1.2070	0.5183	+0.2720	+90	+25
ζ Piscium	4.8	3.11	21.8	7 1.0	12 18.2	+ 4 58.3	+0.3925	0.5210	0.2705	+66	−23
88 Piscium	6.2	3.11	21.5	6 26.1	12 47.5	+ 5 26.6	+1.1140	0.5218	0.2703	+90	+18
B. A. C. 490	7.5	3.26	23.3	11 32.3	18 0 15.2	− 7 27.7	−1.0370	0.5303	0.2640	−12	−78
B. A. C. 609	6.0	3.40	23.2	11 46.9	9 53.7	+ 1 51.8	+1.2230	0.5392	0.2560	+90	+30
19 Arietis	5.7	+3.50	+23.8	+14 47.1	16 1.0	+ 7 46.7	−0.2692	0.5449	+0.2495	+30	−53
27 Arietis	6.3	3.63	23.9	17 14.2	23 51.4	− 8 39.5	−0.8168	0.5534	0.2393	0	−73
36 Arietis	6.5	3.74	23.6	17 19.1	19 5 36.9	− 3 6.4	+0.4569	0.5599	0.2309	+72	−13
40 Arietis	6.3	3.75	23.5	17 50.7	7 23.5	− 1 43.7	+0.3349	0.5620	0.2279	+64	−19
π Arietis	5.7	3.76	23.4	17 1.5	7 43.4	− 1 4.5	+1.2310	0.5622	0.2273	+90	+36
ρ^3 Arietis	6.0	+3.80	+23.2	+17 54.3	10 26.6	+ 1 32.6	+0.9629	0.5656	+0.2224	+90	+16
δ Arietis	4.0	3.91	22.8	19 19.7	16 55.6	+ 7 46.9	+0.9462	0.5724	0.2105	+90	+17
ζ Arietis	4.7	3.94	22.8	20 39.3	18 10.5	+ 8 59.0	−0.1102	0.5733	0.2078	+38	−39
τ^1 Arietis	5.0	3.98	22.6	20 46.1	20 47.1	+11 29.6	+0.3125	0.5768	0.2024	+64	−17
τ^2 Arietis	5.3	3.99	22.4	20 21.8	21 24.2	−11 54.8	+0.8379	0.5781	0.2010	+90	+11
65 Arietis	6.0	+4.00	+22.4	+20 25.8	22 4.3	−11 16.3	+0.9055	0.5781	+0.1996	+90	+16
B. A. C. 1055	6.8	4.02	22.6	21 40.2	22 6.5	−11 14.2	−0.3156	0.5781	0.1996	+27	−48
66 Arietis	6.0	4.06	22.6	22 26.5	23 38.0	− 9 46.2	−0.7776	0.5805	0.1962	+ 1	−68
9 Tauri	7.0	4.12	22.1	22 51.8	20 2 58.9	− 6 33.3	−0.5505	0.5835	0.1884	+14	−60
g Pleiadum	6.3	4.20	21.6	23 57.5	6 0.5	− 3 38.9	−1.0740	0.5870	0.1810	−20	−66
17 Tauri	4.3	+4.19	+21.6	+23 47.0	6 2.3	− 3 37.2	−0.8956	0.5870	+0.1810	− 7	−66
19 Tauri	5.0	4.20	21.6	24 8.3	6 9.6	− 3 30.2	−1.2230	0.5869	0.1807	−34	−66
20 Tauri	5.0	4.21	21.6	24 2.4	6 24.1	− 3 16.3	−1.0820	0.5879	0.1802	−21	−66
22 Tauri	7.0	4.20	21.6	24 12.0	6 29.1	− 3 11.5	−1.2250	0.5880	0.1801	−35	−66
23 Tauri	4.7	4.20	21.4	23 37.3	6 36.1	− 3 4.8	−0.6336	0.5882	0.1797	+ 9	−64
24 Tauri	8.0	+4.21	+21.3	+23 47.5	6 59.9	− 2 41.9	−0.7212	0.5882	+0.1789	+ 4	−66
η Tauri	3.0	4.21	21.2	23 46.7	7 2.7	− 2 39.2	−0.7074	0.5882	0.1785	+ 5	−66
B. A. C. 1170	6.3	4.21	21.3	23 5.8	7 23.3	− 2 19.5	+0.0263	0.5891	0.1777	+46	−28
B. A. C. 1171	7.8	4.22	21.3	24 1.3	7 25.9	− 2 17.0	−0.8786	0.5891	0.1775	− 6	−66
26 Tauri	7.0	4.22	21.2	23 32.0	7 36.6	− 2 6.7	−0.3652	0.5891	0.1772	+24	−49
27 Tauri	4.0	+4.22	+21.2	+23 43.8	7 41.4	− 2 2.1	−0.5462	0.5892	+0.1770	+14	−59

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1893.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
28 Tauri	6.2	+4.21	+21.2	+23 48.9	20 7 42.0	− 2 1.5	−0.6284	0.5892	+0.1770	+10	−63
33 Tauri	6.3	4.25	20.6	22 52.2	10 43.5	+ 0 52.6	+0.8281	0.5926	0.1690	+90	+15
B. A. C. 1238	6.3	4.26	20.4	22 54.3	12 11.8	+ 2 17.2	+1.0410	0.5933	0.1651	+90	+29
36 Tauri	6.0	4.31	20.1	23 48.9	13 28.2	+ 3 30.4	+0.3461	0.5955	0.1616	+65	−11
χ Tauri	5.7	4.43	18.9	25 22.9	20 13.5	+ 9 58.7	−0.1637	0.6017	0.1422	+35	−35
B. A. C. 1347	7.3	+4.41	+18.6	+24 9.7	20 34.9	+10 19.3	+1.0850	0.6026	+0.1412	+90	+34
62 Tauri	6.0	4.40	18.6	24 3.4	20 46.1	+10 30.0	+1.2140	0.6027	0.1406	+87	+46
W. iv, 1421	6.0	4.73	14.7	27 53.9	21 13 8.2	+ 2 9.3	−0.6728	0.6156	0.0875	+ 6	−60
22 Aurigæ	7.0	4.81	13.1	28 50.5	17 54.8	+ 6 43.2	−1.2150	0.6183	0.0706	−40	−61
β Tauri	2.0	4.81	12.7	28 31.2	18 56.1	+ 7 41.7	−0.8299	0.6190	0.0672	− 4	−61
B. A. C. 1772	6.3	+4.88	+11.5	+29 9.4	23 22.1	−11 59.5	−1.1860	0.6212	+0.0506	−36	−61
136 Tauri	5.3	4.87	9.8	27 35.4	22 4 20.0	− 7 20.0	+0.5446	0.6222	0.0327	+81	+11
κ Aurigæ	4.7	4.99	7.2	29 32.3	11 54.2	− 0 6.5	−1.2140	0.6233	+0.0044	−41	−60
49 Aurigæ	5.7	4.95	4.9	28 6.4	18 45.7	+ 6 26.2	+0.1236	0.6227	−0.0215	+51	− 9
53 Aurigæ	6.0	4.98	4.2	29 4.6	19 50.7	+ 7 28.3	−0.8489	0.6226	0.0254	− 6	−61
54 Aurigæ	6.0	+4.95	+ 4.0	+28 21.5	20 15.5	+ 6 52.8	−0.1594	0.6224	−0.0270	+35	−24
25 Geminorum	6.5	4.95	3.9	28 17.8	20 53.0	+ 8 27.9	−0.1154	0.6223	0.0293	+38	−22
28 Geminorum	6.0	4.98	3.5	29 4.8	22 3.0	+ 9 34.5	−0.9175	0.6222	0.0335	−11	−61
W. vi, 1656	8.2	4.89	1.3	26 59.6	23 4 42.8	− 8 3.8	+0.8141	0.6193	0.0581	+90	+24
47 Geminorum	6.0	4.89	+ 0.2	27 1.9	7 21.7	− 5 32.0	+0.6109	0.6181	0.0674	+89	+12
53 Geminorum	6.3	+4.94	− 0.3	+28 5.0	8 56.9	− 4 1.1	−0.5281	0.6156	−0.0730	+14	−50
59 Geminorum	6.9	4.92	1.4	27 50.7	11 59.3	− 1 6.8	−0.5334	0.6156	0.0838	+14	−51
ι Geminorum	4.0	4.92	1.5	28 0.6	12 24.3	− 0 42.9	−0.7308	0.6146	0.0863	+ 2	−62
b^1 Geminorum	5.3	4.93	2.0	28 20.3	13 40.7	+ 0 30.1	−1.1630	0.6140	0.0896	−32	−62
b^3 Geminorum	6.3	4.92	2.1	28 8.2	13 50.9	+ 0 39.8	−0.9806	0.6140	0.0905	−15	−62
B. A. C. 2472	8.0	+4.92	− 2.2	+28 7.9	14 9.0	+ 0 57.2	−1.0030	0.6139	−0.0911	−17	−62
υ Geminorum	4.3	4.87	2.6	27 8.0	16 2.0	+ 2 45.2	−0.1960	0.6127	0.0977	+33	−32
c Geminorum	6.0	4.81	3.7	26 2.2	18 59.9	+ 5 35.3	+0.5671	0.6101	0.1073	+84	+ 6
φ Geminorum	5.0	4.82	5.0	27 2.4	22 22.6	+ 8 49.1	−0.7984	0.6070	0.1185	− 2	−63
ω^1 Cancri	6.0	4.75	5.7	25 41.0	24 1 6.6	+11 26.1	+0.1982	0.6053	0.1272	+56	−15
ω^2 Cancri	6.3	+4.74	− 5.8	+25 22.9	1 24.5	+11 43.2	+0.4571	0.6040	−0.1279	+74	− 2
ψ^1 Cancri	6.8	4.74	6.8	26 9.4	4 31.3	− 9 18.0	−0.7183	0.6012	0.1374	+ 4	−64
ψ^2 Cancri	5.7	4.73	6.9	25 49.8	4 37.0	− 9 12.5	−0.4101	0.6012	0.1377	+21	−48
λ Cancri	5.7	4.64	7.9	24 21.4	8 23.8	− 5 35.2	+0.4977	0.5973	0.1488	+77	− 2
υ^1 Cancri *mult.*	6.0	4.65	8.6	24 53.0	10 41.7	− 3 23.1	−0.3699	0.5951	0.1552	+24	−47
υ^2 Cancri	5.8	+4.63	− 8.7	+24 29.9	11 26.3	− 2 40.3	−0.1069	0.5940	−0.1574	+38	−33
υ^3 Cancri	6.0	4.61	9.1	24 26.3	12 32.5	− 1 36.8	−0.2239	0.5930	0.1603	+32	−40
υ^4 Cancri	5.7	4.61	9.3	24 26.7	13 6.6	− 1 4.2	−0.3210	0.5930	0.1619	+26	−45
ξ Cancri	5.0	4.39	13.1	22 28.5	25 3 21.9	−11 23.0	−0.9387	0.5763	0.1967	− 9	−68
79 Cancri	6.3	4.38	13.2	22 25.6	3 45.8	−11 0.0	−0.9687	0.5763	0.1977	−11	−68
B. A. C. 3138	6.3	+4.35	−13.4	+21 43.2	5 5.7	− 9 43.2	−0.5311	0.5751	−0.2004	+15	−61
B. A. C. 3206	6.3	4.25	14.1	20 14.8	9 40.2	− 5 19.2	−0.0017	0.5693	0.2099	+44	−34
η Leonis	3.3	3.93	17.4	17 16.8	26 3 53.5	−11 45.7	−1.1410	0.5494	0.2396	−22	−73
37 Leonis	5.7	3.81	17.5	14 15.4	8 5.5	− 7 42.4	+0.8982	0.5450	0.2451	+90	+ 9
B. A. C. 3579	7.2	3.76	18.5	14 53.1	13 36.0	− 2 23.2	−1.1070	0.5392	0.2513	−18	−75
i Leonis	5.7	+3.74	−18.8	+14 40.9	15 9.4	− 0 52.9	−1.2940	0.5381	−0.2527	−35	−75
l Leonis	5.3	3.57	19.1	11 6.4	23 9.4	+ 6 51.3	+0.3018	0.5307	0.2599	+61	−26
B. A. C. 3837	6.3	3.37	19.8	8 36.5	27 11 7.4	− 5 33.7	−0.3233	0.5208	0.2673	+28	−60
σ Leonis	4.1	3.31	19.7	6 36.6	14 38.6	− 2 9.0	+0.8333	0.5195	0.2696	+90	0
β Virginis	3.7	3.08	20.5	+ 2 21.7	28 5 30.5	−11 44.1	+1.2310	0.5091	0.2723	+90	+26
13 Virginis	6.1	+2.91	−20.0	− 0 11.9	20 3.8	+ 2 23.5	−0.0334	0.5030	−0.2711	+42	−46
η Virginis	4.0	2.90	20.1	0 4.6	20 43.0	+ 3 1.6	−0.3375	0.5028	0.2711	+27	−63
k Virginis	5.8	2.50	18.4	9 37.1	30 11 27.1	− 7 20.9	−0.3455	0.4996	0.2508	+24	−64
86 Virginis	5.9	+2.46	−18.3	−11 53.7	18 18.5	− 0 41.2	+0.4189	0.5006	−0.2448	+64	−22

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1893.

Date.	The Star's		Immersion.				Emersion.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Jan. 7	10 Virginis	6.4	6 51	11 40	121	171	6 56	12 45	303	351	1 5
8	38 Virginis†	6.2	6 52	11 36	64	115	7 26	12 11	356	46	0 34
11	ι¹ Libræ	5.0	10 52	15 24	156	200	11 49	16 21	268	307	0 57
11	ι² Libræ	6.5	11 9	15 41	93	135	12 13	16 45	333	8	1 4
14	3 Sagittarii*	4.6	11 48	16 8	104	156	12 48	17 9	287	336	1 0
	NEW MOON.										
22	10 Ceti	6.2	5 4	8 53	81	31	5 59	9 48	220	169	0 55
25	50 Arietis	6.8	4 13	7 51	77	39	5 29	9 7	230	180	1 16
25	54 Arietis	6.3	8 33	12 10	62	8	9 29	13 6	268	217	0 56
26	32 Tauri	6.0	3 2	6 36	72	101	4 23	7 57	238	218	1 21
29	W. vi, 1656	8.2	1 15	4 37	109	164	2 8	5 30	241	299	0 53
29	47 Geminorum	6.0	4 43	8 5	128	187	5 45	9 7	234	283	1 2
31	B. A. C. 3138	6.3	5 6	8 20	28	85	6 22	8 36	2	59	1 16
31	B. A C. 3206	6.3	11 45	14 58	116	65	12 53	16 6	305	249	1 8
Feb. 2	B. A. C. 3837	6.3	15 51	18 56	118	66	16 50	19 55	306	253	0 59
7	B. A. C. 4896	6.6	9 44	12 31	81	131	10 34	13 21	343	27	0 50
	NEW MOON.										
18	4 Ceti	6.0	4 9	6 12	125	78	4 33	6 36	170	122	0 24
18	5 Ceti	6.0	4 23	6 26	115	68	4 55	6 58	181	132	0 32
18	B. A. C. 5	5.7	4 37	6 40	81	32	5 31	7 34	217	166	0 54
20	54 Ceti	5.5	5 1	6 57	53	4	6 10	8 6	250	198	1 9
21	π Arietis	5.7	7 41	9 32	34	340	8 29	10 20	290	237	0 48
22	B. A. C. 1189	6.0	9 7	10 54	85	29	10 4	11 51	255	203	0 57
24	136 Tauri	5.3	9 23	11 2	44	343	10 6	11 45	325	264	0 43
26	ω¹ Cancri	6.0	10 23	11 54	97	39	11 30	13 1	308	248	1 7
26	ω² Cancri	6.3	11 5	12 36	145	86	12 1	13 32	258	199	0 56
Mar. 14	B. A. C. 7550†	6.3	16 15	16 42	48	99	17 12	17 39	281	326	0 57
	NEW MOON.										
21	65 Arietis	6.0	6 41	6 42	35	340	7 35	7 36	289	233	0 54
24	49 Aurigæ	5.7	7 50	7 39	51	358	8 44	8 33	324	264	0 54
25	υ Geminorum	4.3	6 40	6 25	47	84	7 30	7 15	335	335	0 50
26	υ⁴ Cancri	5.7	5 2	4 44	89	147	6 17	5 59	298	352	1 15
28	42 Leonis	6.0	6 12	5 46	81	135	7 15	6 49	328	19	1 3
Apr. 1	h Virginis	5.8	13 50	13 7	184	178	14 40	13 57	257	239	0 50
4	B. A. C. 5254	5.8	13 57	13 2	169	213	14 52	13 57	251	264	0 55
	NEW MOON.										
23	B. A. C. 3138	6.3	5 54	3 45	103	159	7 13	5 4	295	343	1 19
23	B. A. C. 3206	6.3	13 18	11 3	128	72	13 18	12 8	290	235	1 0
May 3	43 Ophiuchi	5.8	16 22	13 33	100	111	17 56	15 7	285	276	1 34
19	ω¹ Cancri	6.0	10 54	7 3	110	50	11 59	8 8	292	232	1 5
19	ω² Cancri	6 3	11 39	7 48	161	102	12 20	8 29	241	182	0 41
24	η Virginis	4.0	13 33	9 21	175	153	14 32	10 20	267	232	0 59
June 4	38 Capricorni	6.9	18 24	13 29	40	76	19 38	14 43	276	299	1 14
	NEW MOON.										
22	h Virginis	5.8	13 6	7 1	138	143	14 32	8 27	303	287	1 26
July 6	B. A. C. 410	6.0	20 18	13 16	54	106	21 19	14 17	240	289	1 1
8	54 Arietis†	6.3	19 47	12 38	62	110	20 43	13 34	241	293	0 56

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.
* Whole occultation below the horizon of Washington.
† Immersion below the horizon of Washington.
‡ Emersion below the horizon of Washington.

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1893.

Date.	The Star's		Immersion				Emersion.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
	NEW MOON.										
July 23	α Scorpii	1.4	16 36	8 28	166	163	17 27	9 19	232	218	0 51
24	43 Ophiuchi	5.8	16 50	8 38	79	84	18 19	10 7	300	288	1 29
Aug. 2	ε Piscium	5.5	20 43	11 55	97	146	21 32	12 44	192	238	0 49
3	B. A. C. 609	6.0	21 37	12 45	33	85	22 36	13 44	259	308	0 59
4	π Arietis	5.7	20 9	11 13	35	85	20 54	11 58	271	324	0 45
4	ρ^2 Arietis	6.0	23 16	14 20	32	86	0 16	15 20	262	311	1 0
4	ρ^3 Arietis	6.0	23 20	14 24	110	164	0 1	15 5	184	235	0 41
5	B. A. C. 1189	6.0	21 31	12 31	97	150	23 16	14 16	214	269	1 45
	NEW MOON.										
16	86 Virginis	5.9	16 40	6 58	112	75	17 54	8 12	306	261	1 14
23	ω Sagittarii	5.1	23 50	13 39	10	328	0 26	14 15	305	258	0 36
25	38 Capricorni	6.9	18 58	8 40	100	130	20 6	9 48	208	226	1 8
25	37 Capricorni	6.0	19 0	8 42	63	93	20 24	10 6	245	259	1 24
25	κ Capricorni	5.0	0 49	14 30	47	10	1 54	15 35	248	203	1 5
27	ψ^1 Aquarii	4.1	20 28	10 1	102	137	21 21	10 54	186	211	0 53
28	27 Piscium †	5.1	17 32	7 2	107	158	18 13	7 43	198	249	0 41
28	29 Piscium	5.0	19 10	8 40	82	131	20 10	9 40	213	258	1 0
28	B. A. C. 8351	8.0	19 32	9 2	39	27	20 35	10 5	255	299	1 3
31	36 Arietis	6.5	2 36	15 53	38	40	3 51	17 8	257	225	1 15
	NEW MOON.										
Sept. 23	74 Aquarii	6.0	19 51	7 39	39	75	21 4	8 52	255	279	1 13
24	24 Piscium	6.1	4 0	15 42	17	330	4 49	16 31	276	226	0 49
28	δ Arietis	4.0	20 58	8 26	63	115	21 51	9 19	243	298	0 53
28	τ^1 Arietis	5.0	2 5	13 32	34	71	3 14	14 41	265	276	1 9
Oct. 1	49 Aurigæ	5.7	4 3	15 17	113	174	5 14	16 28	241	288	1 11
2	ν Geminorum	4.3	2 52	14 3	35	94	3 28	14 39	327	27	0 36
	NEW MOON.										
17	b Sagittarii	4.6	18 53	5 6	134	147	19 40	5 53	194	197	0 47
20	56 Aquarii	6.3	19 40	5 41	82	116	20 54	6 55	213	234	1 14
21	ψ^1 Aquarii	4.1	18 0	3 58	80	130	19 3	5 1	224	269	1 3
23	ζ Piscium ‡	4.8	6 54	16 42	44	352	7 45	17 33	266	216	0 51
26	36 Tauri	6.0	6 12	15 48	105	51	7 15	16 51	227	169	1 3
	NEW MOON.										
Nov. 14	B. A. C. 7077	6.4	21 59	6 22	127	108	22 33	6 56	183	158	0 34
15	33 Capricorni	5.7	22 46	7 5	74	55	24 0	8 19	219	187	1 14
17	74 Aquarii	6.0	18 2	2 14	54	102	19 11	3 23	252	294	1 9
18	24 Piscium	6.1	3 31	11 37	30	346	4 30	12 36	260	211	0 59
22	τ^2 Arietis	5.3	1 10	9 1	125	173	1 39	9 30	173	216	0 29
24	136 Tauri	5.3	10 10	17 51	144	84	10 49	18 30	227	168	0 39
26	ω^1 Cancri	6.0	6 17	13 52	138	189	7 22	14 57	249	273	1 5
	NEW MOON.										
Dec. 10	B. A. C. 6628 ‡	5.9	22 41	5 21	110	72	23 45	6 25	211	166	1 4
17	ζ Piscium	4.8	7 6	13 18	99	50	8 2	14 4	213	163	0 56
19	40 Arietis	6.3	0 27	6 32	359	49	1 3	7 8	294	339	0 36
20	36 Tauri	6.0	8 12	14 12	97	39	9 11	15 11	245	189	0 59
23	47 Geminorum	6.0	23 54	5 43	102	150	24 42	6 31	254	306	0 48
24	λ Cancri	5.7	0 58	6 43	106	153	1 48	7 33	266	317	0 50
30	86 Virginis	5.9	11 37	16 57	89	116	13 39	17 59	351	6	1 2

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.
* Whole occultation below the horizon of Washington.
† Immersion below the horizon of Washington.
‡ Emersion below the horizon of Washington.

DOWNES'S TABLE GIVING VALUES OF τ.

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

h		Lat. 72°			Lat. 66°			Lat. 60°			Lat. 54°			Lat. 48°			Lat. 42°			Lat. 36°		
		x'			x'			x'			x'			x'			x'			x'		
		.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	2	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	6	5	6	7
	20	3	3	4	4	5	5	5	6	7	6	7	9	8	9	11	9	10	12	11	12	14
	30	5	5	6	6	7	8	8	9	11	10	11	13	12	13	16	14	16	18	16	18	22
	40	6	7	8	8	9	11	11	12	14	13	15	17	16	18	21	18	21	24	21	24	29
	50	7	8	10	10	11	13	13	15	17	16	19	21	19	22	26	22	26	30	26	30	36
1	0	9	10	11	12	14	16	16	18	21	19	22	26	23	26	31	26	31	36	30	35	42
	10	10	12	13	14	16	18	18	21	24	22	26	30	26	30	36	31	35	42	35	40	48
	20	12	13	15	16	18	21	21	23	27	25	29	34	30	34	40	35	40	47	39	45	54
	30	13	15	17	18	20	23	23	26	30	28	32	37	33	38	45	39	44	52	43	50	59
	40	14	16	18	20	22	25	25	29	33	31	35	41	36	42	49	42	48	57	47	54	64
	50	16	18	20	21	24	28	27	31	36	34	38	44	39	45	53	45	52	61	51	58	68
2	0	17	19	22	23	26	30	29	33	39	36	41	47	42	48	56	48	55	65	54	62	72
	10	18	20	23	25	28	32	31	36	41	38	43	50	45	51	59	51	59	68	57	66	76
	20	19	22	24	26	30	34	33	38	43	40	46	53	47	54	62	54	62	71	60	69	90
	30	20	23	26	28	31	36	35	40	45	42	48	55	50	56	65	57	64	74	63	72	83
	40	21	24	27	29	33	37	37	42	47	44	50	58	52	59	68	59	67	77	65	74	86
	50	22	25	28	30	34	39	38	43	49	46	52	60	54	61	70	61	69	79	68	76	88
3	0	23	26	30	31	35	40	40	45	51	48	54	62	56	63	72	63	71	81	70	79	90
	10	24	27	31	33	36	42	41	46	53	49	56	63	57	65	74	65	73	83	72	81	92
	20	25	28	32	34	38	43	42	47	54	51	57	65	59	66	75	66	74	85	73	82	93
	30	26	29	33	35	39	44	43	49	55	52	58	66	60	67	77	68	76	86	74	83	95
	40	26	29	33	36	40	45	44	50	56	53	59	67	61	69	78	69	77	87	75	84	96
	50	27	30	34	36	41	46	45	51	57	54	60	68	62	70	79	70	78	88	76	85	96
4	0	28	31	35	37	41	47	46	52	58	55	61	69	63	70	79	71	79	89	77	86	97
	10	28	31	35	38	42	47	47	52	59	56	62	70	64	71	80	71	79	89	78	86	97
	20	29	32	36	38	42	48	47	53	59	56	62	70	64	71	80	72	80	89	78	87	97
	30	29	32	36	39	43	48	48	53	60	57	63	71	65	72	81	72	80	90	79	87	97
	40	29	33	37	39	43	49	48	53	60	57	63	71	65	72	81	72	80	89	79	87	97
	50	30	33	37	39	44	49	48	54	60	57	63	71	65	72	81	72	80	89	79	87	96
5	0	30	33	37	39	44	49	49	54	60	57	63	71	65	72	80	72	80	89	78	86	95
	10	30	33	37	40	44	49	49	54	60	57	63	71	65	72	80	72	79	88	78	86	95
	20	30	33	37	40	44	49	49	54	60	57	63	71	65	71	79	72	79	88	78	85	94
	30	30	33	37	40	44	49	49	54	60	57	63	70	64	71	79	71	78	87	77	85	93
	40	30	33	37	39	44	49	48	53	59	56	62	70	64	70	78	70	77	86	76	84	91
	50	30	33	37	39	43	48	48	53	59	56	61	69	63	70	77	70	77	85	75	83	90
6	0	30	33	37	39	43	48	48	52	58	55	61	68	63	69	76	69	76	84	74	82	89
	10	30	33	37	39	43	47	47	52	58	55	60	67	62	68	75	68	75	82	73	80	87
	20	29	32	36	38	42	47	47	51	57	54	60	66	61	67	74	67	73	81	72	79	85
	30	29	32	36	38	42	46	46	51	56	53	59	65	60	66	73	66	72	80	71	78	84
	40	29	32	35	37	41	46	45	50	55	53	58	64	59	65	71	65	71	78	70	76	82
	50	28	31	35	37	40	45	45	49	54	52	57	62	58	63	70	63	69	76	68	74	80
7	0	28	31	34	36	40	44	44	48	53	51	55	61	57	62	68	62	68	75	67	73	78
	10	27	30	34	35	39	43	43	47	52	50	54	60	56	61	67	61	66	73	65	71	76
	20	27	30	33	35	38	42	42	46	51	48	53	58	54	59	65	59	65	71	64	69	74
	30	26	29	32	34	37	41	41	45	49	47	52	57	53	58	63	58	63	69	62	67	71
	40	26	28	31	33	36	40	40	44	48	46	50	55	51	56	62	56	61	67			
	50	25	27	31	32	35	39	39	42	47	45	49	53	50	54	60	54	59	65			
8	0	24	27	30	31	34	38	38	41	45	43	47	52	48	52	58	53	57	63			
	10	24	26	29	30	33	37	36	40	44	42	46	50	47	51	56	62	55	60			
	20	23	25	28	29	32	35	35	38	42	40	44	48	45	49	54						
	30	22	24	27	28	31	34	34	37	41	39	42	46	43	47	52						
	40	21	23	26	27	30	33	33	35	39	37	41	44	41	45	49						
	50	20	22	25	26	28	31	31	34	37	36	39	42	40	43	47						
9	0	19	21	24	25	27	30	30	32	35	34	37	40									
	10	18	20	22	24	26	28	28	31	34	32	35	38									
	20	18	19	21	22	24	27	27	29	32	31	33	36									
	30	16	18	20	21	23	25	25	27	30	29	31	34									
	40	15	17	19	20	22	24	24	26	28	27	29	32									

(Concluded at bottom of next page.)

DOWNES'S TABLE GIVING VALUES OF τ.

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

h	Lat. 30°			Lat. 24°			Lat. 18°			Lat. 12°			Lat. 6°			Lat. 0°		
	x'			x'			x'			x'			x'			x'		
	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	6	7	8	7	7	9	7	8	9	7	8	10	7	8	10	8	9	11
20	12	14	16	13	14	18	14	16	19	14	16	20	14	17	21	15	18	21
30	17	20	24	19	22	27	20	24	29	21	25	30	21	25	31	22	26	32
40	23	27	32	25	29	36	26	32	39	28	33	40	28	34	41	29	34	42
50	28	33	40	31	36	44	32	39	48	35	40	50	35	42	51	35	42	52
1 0	33	39	47	36	42	52	38	46	56	40	47	59	41	49	60	41	49	61
10	38	45	54	41	48	59	44	52	63	46	54	67	47	56	68	47	56	69
20	43	50	60	46	54	65	49	58	70	52	60	74	53	62	75	53	63	76
30	48	55	66	51	60	71	54	64	76	57	66	79	58	68	81	59	69	82
40	52	60	71	56	65	77	59	69	82	62	72	84	63	73	87	64	74	88
50	56	64	76	60	69	82	64	74	87	66	77	89	68	78	92	68	79	93
2 0	59	68	80	64	73	86	68	78	91	70	81	95	72	83	97	72	83	98
10	62	72	84	67	77	90	71	81	95	74	85	99	75	87	101	76	87	102
20	65	75	87	70	81	94	74	85	99	77	88	103	78	90	105	79	91	106
30	68	78	90	73	84	97	77	88	102	80	91	106	81	93	108	82	94	109
40	71	81	93	76	87	100	80	91	105	83	94	109	84	96	111	85	97	112
50	74	83	96	78	89	102	82	93	107	85	96	111	87	98	113	87	99	114
3 0	76	85	98	80	91	104	84	95	109	87	98	113	89	100	115	89	101	116
10	77	87	99	82	92	106	86	97	111	89	100	114	91	102	116	91	103	117
20	79	89	101	84	94	107	88	99	112	91	102	115	92	104	118	93	104	118
30	80	90	102	85	95	108	89	100	113	92	103	116	94	105	119	94	105	119
40	81	91	103	86	96	109	90	101	114	93	104	117	95	106	119	95	106	120
50	82	92	104	87	97	110	91	101	114	94	104	118	95	106	120	96	107	120
4 0	83	92	104	88	98	110	92	102	114	94	105	118	96	107	120	97	107	120
10	84	93	104	88	98	110	92	102	114	95	105	118	96	107	120	97	107	120
20	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	120
30	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	119
40	84	93	104	89	98	109	92	102	113	95	104	116	96	106	118	97	107	119
50	84	93	103	88	97	108	92	101	113	94	104	115	96	106	117	96	106	118
5 0	84	92	102	88	97	108	91	101	112	94	103	114	95	105	116	96	105	117
10	83	92	102	88	96	107	91	100	110	93	102	113	95	104	115	95	104	115
20	83	91	101	87	95	106	90	99	109	92	101	112	94	103	114	94	103	114
30	82	90	100	86	94	104	89	98	108	92	100	111	93	102	112	93	102	113
40	81	89	98	85	93	103	88	97	106	91	99	109	92	100	110			
50	80	88	97	84	92	101	87	95	105	89	97	107						
6 0	79	87	95	83	91	100	86	94	103	88	96	105						
10	78	85	94	82	89	98	84	92	101									
20	77	84	92	80	88	96	82	91	99									
30	75	82	90	79	86	94												
40	74	81	88	77	84	92												
50	72	79	86															
7 0	71	77	84															

(Concluded from preceding page.)

h	Lat. 72°			Lat. 66°			Lat. 60°			h	Lat. 72°			Lat. 66°			Lat. 60°		
	x			x'			x'				x'			x'			x'		
	.62	.56	.50	.62	.56	.50	.62	.56	.50		.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	h m	m	m	m	m	m	m	m	m	m
9 50	14	16	18	18	20	22	22	24	26	11 0	7	8	8	9	10	11	10	11	12
10 0	13	15	16	17	19	21	20	22	24	10	6	6	7	7	8	9	9	9	10
10	12	14	15	16	17	19	19	21	22	20	5	5	6	6	6	7	7	8	8
20	11	12	14	15	16	17	17	19	20	30	3	4	4	4	5	5			
30	10	11	12	13	14	16	16	17	18	40	2	3	3	3	3	4			
40	9	10	11	12	13	14	14	15	16	50	1	1	1	1	2	2			
50	8	9	10	10	11	12	12	13	14	12 0	0	0	0	0	0	0			

FOR WASHINGTON MEAN NOON.

Date.	k	i	θ	L	Date.	k	i	θ	L
Jan. 1	0.652	72°.3	188°.7	43.5	July 0	0.605	77°.9	10°.4	36.9
6	0.747	60.5	184.9	36.9	5	0.523	87.4	14.3	34.1
11	0.812	51.3	180.4	31.8	10	0.443	96.6	17.6	32.2
16	0.861	43.7	175.5	28.7	15	0.360	106.3	20.8	30.3
21	0.898	37.3	170.2	26.7	20	0.273	117.0	24.2	27.3
26	0.928	31.0	164.8	26.0	25	0.174	129.9	28.4	21.4
31	0.954	24.8	158.6	26.4	30	0.094	144.4	35.5	13.6
Feb. 5	0.973	18.8	150.8	28.0	Aug. 4	0.028	160.6	54.6	4.8
10	0.989	11.9	138.0	31.0	9	0.012	167.1	132.0	2.3
15	0.998	5.0	93.8	35.9	14	0.063	150.9	176.4	11.1
20	0.993	9.9	6.1	43.4	19	0.195	127.5	187.9	30.9
25	0.961	22.9	345.9	53.5	24	0.379	104.0	194.2	50.3
Mar. 2	0.881	40.4	338.4	63.2	29	0.592	79.4	197.8	66.4
7	0.735	62.0	334.4	71.1	Sept. 3	0.780	55.9	204.1	69.0
12	0.537	85.8	331.6	66.2	8	0.910	35.0	211.0	61.4
17	0.322	110.8	328.3	48.4	13	0.976	18.0	219.6	50.5
22	0.142	134.9	324.3	24.7	18	0.998	5.7	252.6	41.1
27	0.036	158.1	313.1	6.8	23	0.996	7.5	290.0	33.6
Apr. 1	0.004	173.0	224.2	0.7	28	0.982	15.3	16.5	30.0
6	0.042	156.4	165.0	7.2	Oct. 3	0.962	22.5	21.3	27.3
11	0.123	138.8	156.9	17.8	8	0.938	28.9	22.9	26.0
16	0.217	124.5	154.0	25.4	13	0.909	35.2	23.0	25.9
21	0.309	112.5	152.4	29.7	18	0.874	41.6	22.4	26.9
26	0.400	101.5	151.7	32.3	23	0.831	48.6	21.2	29.1
May 1	0.477	92.7	151.5	33.4	28	0.774	56.8	19.5	32.6
6	0.555	83.1	151.7	35.0	Nov. 2	0.697	66.8	17.6	37.6
11	0.636	74.3	152.7	37.8	7	0.590	79.7	15.7	43.6
16	0.721	63.8	154.4	42.0	12	0.441	91.8	14.0	47.6
21	0.813	51.2	157.1	48.5	17	0.175	130.5	13.0	28.5
26	0.904	36.2	161.4	56.6	22	0.059	151.9	10.8	13.5
31	0.976	18.0	169.4	64.4	27	0.008	169.8	216.5	2.0
June 5	0.999	3.5	302.7	67.4	Dec. 2	0.155	133.6	203.2	31.9
10	0.961	22.7	346.2	63.3	7	0.379	104.1	201.0	52.8
15	0.880	40.6	354.5	55.2	12	0.570	81.9	198.4	52.4
20	0.784	55.3	0.8	47.1	17	0.705	65.8	195.2	44.8
25	0.691	67.6	6.0	41.0	22	0.797	53.6	191.3	37.5
30	0.605	77.9	10.4	36.9	27	0.859	44.2	186.8	32.0
					32	0.902	36.4	181.7	28.4

NOTATION.

k, the ratio of the illuminated portion of the apparent disk to the entire apparent disk considered as the superficies of a circle.

i, the angle between the sun and earth, as seen from the planet.

θ, the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L, the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR WASHINGTON MEAN NOON.

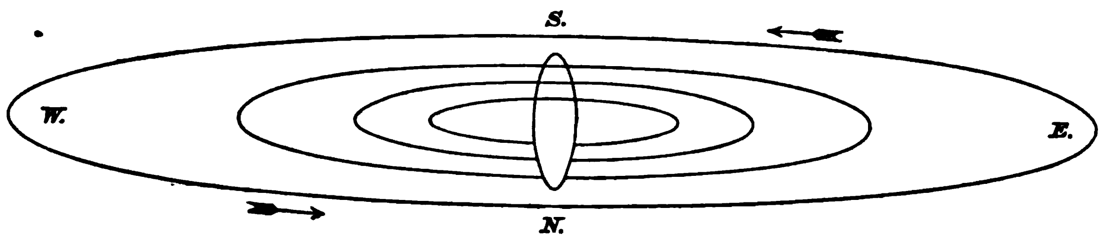
Date.	k	i	θ	L	Date.	k	i	θ	L
Jan. 1	0.873	41°.8	189°.7	62.8	July 5	0.953	25°.0	8°.2	51.3
6	0.883	40.0	186.9	61.2	10	0.945	27.0	10.4	52.0
11	0.892	38.3	183.9	59.7	15	0.937	29.0	12.5	52.8
16	0.902	36.5	180.9	58.4	20	0.929	31.0	14.4	53.6
21	0.911	34.8	177.7	57.1	25	0.919	33.0	16.1	54.5
26	0.919	33.0	174.6	55.9	30	0.909	35.0	17.6	55.5
31	0.927	31.3	171.5	54.8	Aug. 4	0.899	37.0	18.9	56.6
Feb. 5	0.935	29.6	168.5	53.8	9	0.889	39.0	20.0	57.8
10	0.942	27.9	165.7	52.8	14	0.878	41.0	20.9	59.1
15	0.948	26.2	162.9	52.0	19	0.866	42.9	21.6	60.5
20	0.955	24.6	160.3	51.2	24	0.854	44.8	22.0	62.0
25	0.960	23.0	157.9	50.5	29	0.843	46.7	22.2	63.7
Mar. 2	0.966	21.3	155.8	49.8	Sept. 3	0.830	48.7	22.2	65.5
7	0.971	19.6	153.7	49.2	8	0.817	50.6	21.9	67.4
12	0.976	17.9	151.9	48.7	13	0.804	52.6	21.5	69.5
17	0.980	16.2	150.4	48.2	18	0.790	54.6	20.7	71.8
22	0.984	14.6	148.8	47.8	23	0.776	56.5	19.8	74.3
27	0.987	12.9	147.6	47.5	28	0.762	58.5	18.6	77.1
Apr. 1	0.991	11.2	146.4	47.2	Oct. 3	0.747	60.4	17.2	80.1
6	0.994	9.4	145.2	47.0	8	0.732	62.4	15.6	83.3
11	0.995	7.7	143.7	46.8	13	0.716	64.4	13.8	86.8
16	0.997	5.9	141.4	46.7	18	0.700	66.5	11.8	90.6
21	0.999	4.1	137.9	46.6	23	0.684	68.5	9.6	95.0
26	0.999	2.7	127.6	46.5	28	0.666	70.6	7.3	99.7
May 1	1.000	1.3	83.3	46.6	Nov. 2	0.648	72.7	4.9	104.7
6	1.000	2.0	12.4	46.7	7	0.630	75.0	2.5	110.4
11	0.999	3.7	355.5	46.8	12	0.610	77.3	0.0	116.5
16	0.998	5.5	351.7	47.0	17	0.590	79.7	357.6	123.3
21	0.996	7.3	350.6	47.2	22	0.568	82.1	355.2	130.7
26	0.994	9.2	351.1	47.4	27	0.546	84.7	352.9	138.7
31	0.991	11.1	352.6	47.7	Dec. 2	0.523	87.4	350.8	147.4
June 5	0.987	13.1	354.3	48.1	7	0.497	90.2	348.7	156.9
10	0.983	15.1	356.4	48.5	12	0.470	93.4	346.8	167.0
15	0.978	17.0	358.7	48.9	17	0.442	96.7	345.1	178.0
20	0.973	19.0	1.1	49.4	22	0.412	100.2	343.5	188.5
25	0.967	21.0	3.5	50.0	27	0.379	104.0	342.0	199.3
30	0.960	23.0	5.9	50.6	32	0.343	108.3	340.5	208.5

Mars not being in opposition during the year 1893, the satellites will not be visible.

APPARENT DISK OF MARS.

January	1,	0.875
January	31,	0.892
March	1,	0.913
March	31,	0.936
April	30,	0.957
May	30,	0.974
June	29,	0.987
July	29,	0.996
August	28,	1.000
September	27,	0.998
October	27,	0.991
November	26,	0.978
December	26,	0.960

The numbers in this table are the versed sines of the illuminated disk, the apparent diameter of the planet being taken as unity.



APPARENT ORBITS OF THE SATELLITES OF JUPITER IN 1893,
AS SEEN IN AN INVERTING TELESCOPE.

(THE VERTICAL SCALE IS THREE TIMES THE HORIZONTAL ONE.)

The object of this figure is to facilitate the identification of the satellites in cases where the diagrams of configurations do not suffice for that purpose: reference to the above diagram enables one to identify the inner and outer satellite of the pair. The central, vertical ellipse represents the disk of Jupiter, elongated three times in the vertical direction to correspond to the representation of the orbits of the satellites.

Facing each page of the phenomena of Jupiter's satellites, pages 456—476, is the page of diagrams of configurations, for the same month. The light disks ○ in the vertical row in the middle of the page represent the relative position of Jupiter each day. The dots adjacent in the same horizontal space represent the positions of the several satellites on the same day, at the hour and minute of Washington mean time indicated above the diagrams. The latitudes of the satellites are always considered zero in constructing the diagrams, except where two or more satellites chance to be at nearly the same distance from the planet, when they are placed one above the other according to their apparent latitudes. The numerals designating the satellites are placed on the right or left hand side of the dot, according as the motion of the satellite, for the time of the configuration, is toward the east or toward the west—the motion being always toward the numeral. Frequently, at the epoch of the configuration, one or more satellites will be invisible, being projected on the disk of the planet: this phenomenon is indicated by a light disk ○ at the left hand side of the page. Frequently, also, one or more satellites will be invisible, being concealed in occultation behind the disk, or eclipsed in the shadow of the planet: this phenomenon is indicated by a dark disk ● at the right hand side of the page. In both cases, the annexed numeral serves to point out which satellite is thus rendered invisible.

When an observation is made at a different hour from that for which the diagram is constructed, the motion of the satellite during the interval may be judged by transferring its given position to the above diagram, and estimating its motion during the elapsed interval on the above diagram of the orbits, by means of the following table of the periods:—

MEAN SYNODIC PERIODS OF THE SATELLITES.

	d	h	m	s		d
I.	1	18	28	35.945	=	1.76986048
II.	3	13	17	53.735	=	3.55409416
III.	7	3	59	35.854	=	7.16638720
IV.	16	18	5	6.928	=	16.75355241

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE I.

		h m			h m			h m			h m
Jan.	2	7 52.0	March	24	18 46.8	July	26	17 57.3	Oct.	14	8 52.8
	4	2 20.9		26	13 17.4		28	12 26.5		16	3 19.2
	5	20 49.8		28	7 47.7		30	6 55.7		17	21 45.5
	7	15 18.8		30	2 18.4	Aug.	1	1 24.7		19	16 11.8
	9	9 47.9		31	20 48.9		2	19 53.8		21	10 38.1
	11	4 17.1	April	2	15 19.4		4	14 22.7		23	5 4.3
	12	22 46.3		4	9 50.0		6	8 51.7		24	23 30.4
	14	17 15.6		6	4 20.8		8	3 20.5		26	17 56.7
	16	11 44.8	May	20	11 2.0		9	21 49.4		28	12 22.7
	18	6 14.3		22	5 32.2		11	16 18.2		30	6 48.9
	20	0 43.6		24	0 2.6		13	10 47.0	Nov.	1	1 14.9
	21	19 13.1		25	18 32.8		15	5 15.6		2	19 40.8
	23	13 42.6		27	13 3.2		16	23 44.3		4	14 6.7
	25	8 12.2		29	7 33.4		18	18 12.9		6	8 32.8
	27	2 41.8		31	2 3.7		20	12 41.4		8	2 58.7
	28	21 11.5	June	1	20 34.0		22	7 9.7		9	21 24.7
	30	15 41.2		3	15 4.3		24	1 38.2		11	15 50.6
Feb.	1	10 11.0		5	9 34.6		25	20 6.5		13	10 16.6
	3	4 40.8		7	4 4.8		27	14 34.8		15	4 42.4
	4	23 10.6		8	22 34.9		29	9 2.9		16	23 8.3
	6	17 40.5		10	17 4.9		31	3 31.3		18	17 34.2
	8	12 10.4		12	11 35.0	Sept.	1	21 59.1		20	12 0.1
	10	6 40.4		14	6 5.0		3	16 27.2		22	6 26.0
	12	1 10.4		16	0 35.1		5	10 55.2		24	0 52.1
	13	19 40.4		17	19 5.1		7	5 23.1		25	19 18.1
	15	14 10.5		19	13 35.1		8	23 50.8		27	13 44.1
	17	8 40.6		21	8 5.1		10	18 18.6		29	8 10.1
	19	3 10.7		23	2 35.0		12	12 46.3	Dec.	1	2 36.3
	20	21 40.8		24	21 4.9		14	7 13.9		2	21 2.3
	22	16 11.0		26	15 34.7		16	1 41.3		4	15 28.6
	24	10 41.2		28	10 4.5		17	20 8.8		6	9 54.8
	26	5 11.4		30	4 34.3		19	14 36.2		8	4 21.1
	27	23 41.6	July	1	23 4.1		21	9 3.5		9	22 47.4
March	1	18 11.9		3	17 33.8		23	3 30.7		11	17 13.4
	3	12 42.1		5	12 3.5		24	21 57.9		13	11 40.2
	5	7 12.4		7	6 33.1		26	16 25.0		15	6 6.8
	7	1 42.7		9	1 2.8		28	10 52.1		17	0 33.3
	8	20 13.2		10	19 32.5		30	5 19.1		18	19 0.1
	10	14 43.5		12	14 2.1	Oct.	1	23 46.1		20	13 26.8
	12	9 13.9		14	8 31.6		3	18 12.9		22	7 53.6
	14	3 44.2		16	3 1.2						
	15	22 14.7		17	21 30.7		5	12 39.7		24	2 20.4
	17	16 45.0		19	16 0.1		7	7 6.5		25	20 47.4
	19	11 15.5		21	10 29.4		9	1 33.2		27	15 14.4
	21	5 46.1		23	4 58.8		10	19 59.7		29	9 41.5
	23	0 16.4		24	23 28.0		12	14 26.3		31	4 8.6

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE II.

		h m			h m			h m			h m
Jan.	1	16 21.9	March	28	1 29.8	July	23	12 28.6	Oct.	13	5 29.6
	5	5 38.8		31	14 56.4		27	1 49.7		16	18 38.3
	8	18 57.3					30	15 11.1		20	7 46.7
	12	8 16.5	May	13	8 15.7	Aug.	3	4 31.5		23	20 54.7
	15	21 36.1		16	21 41.6		6	17 52.0		27	10 2.3
	19	10 56.5		20	11 8.4		10	7 11.3		30	23 9.4
	23	0 17.3		24	0 34.2		13	20 30.7	Nov.	3	12 16.4
	26	13 38.3		27	14 0.9		17	9 49.1		7	1 23.1
	30	2 59.7		31	3 26.2		20	23 7.6		10	14 29.5
Feb.	2	16 21.9	June	3	16 52.7		24	12 25.0		14	3 35.7
	6	5 44.1		7	6 17.7		28	1 42.3		17	16 42.1
	9	19 7.0		10	19 43.7		31	14 58.5		21	5 48.5
	13	8 30.0		14	9 8.5	Sept.	4	4 14.6		24	18 55.1
	16	21 53.8		17	22 34.1		7	17 29.7		28	8 1.5
	20	11 17.5		21	11 58.2		11	6 44.6	Dec.	1	21 8.4
	24	0 41.9		25	1 23.3		14	19 58.5		5	10 15.6
	27	14 6.1		28	14 47.2		18	9 12.2		8	23 23.0
March	3	3 31.2	July	2	4 11.7		21	22 24.8		12	12 30.8
	6	16 55.9		5	17 34.3		25	11 37.2		16	1 39.1
	10	6 21.4		9	6 58.8		29	0 48.7		19	14 47.8
	13	19 46.4		12	20 21.3	Oct.	2	13 59.8		23	3 57.3
	17	9 12.3		16	9 44.4		6	3 10.2		26	17 7.3
	20	22 37.8		19	23 6.2		9	16 20.2		30	6 17.9
	24	12 4.1									

SATELLITE III.

		h m			h m			h m			h m
Jan.	5	18 38.8	April	1	22 43.3	July	25	21 51.0	Oct.	19	19 40.6
	12	22 43.4				Aug.	2	2 2.7		26	23 1.5
	20	2 52.5	May	15	1 51.8		9	6 11.4	Nov.	3	2 20.3
	27	7 4.4		22	6 21.8		16	10 15.9		10	5 36.3
Feb.	3	11 19.7		29	10 51.0		23	14 16.6		17	8 51.6
	10	15 37.8	June	5	15 19.8		30	18 13.1		24	12 6.6
	17	19 58.7		12	19 47.0	Sept.	6	22 5.4	Dec.	1	15 22.6
	25	0 22.7		20	0 13.1		14	1 53.6		8	18 41.0
March	4	4 48.2		27	4 36.9		21	5 36.5		15	22 2.6
	11	9 15.7	July	4	8 58.7		28	9 14.8		23	1 29.0
	18	13 44.0		11	13 18.5	Oct.	5	12 47.7		30	4 59.6
	25	18 13.1		18	17 35.8		12	16 16.2			

SATELLITE IV.

		h m			h m			h m			h m
Jan.	8	22 54.3	April	3	3 7.1	July	30	3 8.2	Oct.	21	16 14.2
	25	17 47.8	May	23	18 10.9	Aug.	15	21 59.7	Nov.	7	6 33.8
Feb.	11	13 25.5	June	9	14 58.1	Sept.	1	16 3.1		23	20 36.1
	28	9 35.7		26	11 28.3		18	9 7.3	Dec.	10	10 49.6
March	17	6 13.4	July	13	7 34.8	Oct.	5	1 9.8		27	1 44.9

WASHINGTON MEAN TIME.

JANUARY.

d	h	m	s			
1	9	25		I.	Tr.	In.
	10	46		I.*	Sh.	In.
	11	39		I.	Tr.	Eg.
	12	59		I.	Sh.	Eg.
	15	5		II.	Oc.	Dis.
	17	39		II.	Oc.	Re.
	17	51	22.6	II.	Ec.	Dis.
	20	12	24.0	II.	Ec.	Re.
2	3	30		III.	Tr.	In.
	5	58		III.*	Tr.	Eg.
	6	45		I.*	Oc.	Dis.
	9	9		III.*	Sh.	In.
	10	17	4.5	I.*	Ec.	Re.
	11	13		III.	Sh.	Eg.
3	3	54		I.	Tr.	In.
	5	15		I.	Sh.	In.
	6	8		I.*	Tr.	Eg.
	7	28		I.*	Sh.	Eg.
	10	10		II.*	Tr.	In.
	12	45		II.	Tr.	Eg.
	12	56		II.	Sh.	In.
	15	24		II.	Sh.	Eg.
4	1	14		I.	Oc.	Dis.
	4	46	5.8	I.	Ec.	Re.
	22	23		I.	Tr.	In.
	23	44		I.	Sh.	In.
5	0	37		I.	Tr.	Eg.
	1	57		I.	Sh.	Eg.
	4	21		II.	Oc.	Dis.
	6	56		II.*	Oc.	Re.
	7	9	59.7	II.*	Ec.	Dis.
	9	30	51.9	II.*	Ec.	Re.
	17	25		III.	Oc.	Dis.
	19	43		I.	Oc.	Dis.
	19	53		III.	Oc.	Re.
	23	11	57.2	III.	Ec.	Dis.
	23	14	59.8	I.	Ec.	Re.
6	1	1	49.8	III.	Ec.	Re.
	16	52		I.	Tr.	In.
	18	13		I.	Sh.	In.
	19	6		I.	Tr.	Eg.
	20	26		I.	Sh.	Eg.
	23	30		II.	Tr.	In.
7	2	5		II.	Tr.	Eg.
	2	15		II.	Sh.	In.
	4	43		II.	Sh.	Eg.
	14	12		I.	Oc.	Dis.
	17	43	59.1	I.	Ec.	Re.
8	11	21		I.	Tr.	In.
	12	42		I.	Sh.	In.
	13	35		I.	Tr.	Eg.
	14	55		I.	Sh.	Eg.
	17	40		II.	Oc.	Dis.
	20	15		II.	Oc.	Re.
	20	28	31.0	II.	Ec.	Dis.
	22	49	14.8	II.	Ec.	Re.
9	7	32		III.*	Tr.	In.
	8	41		I.*	Oc.	Dis.
	10	1		III.*	Tr.	Eg.
	12	12	54.3	I.	Ec.	Re.
	13	12		III.	Sh.	In.
	15	15		III.	Sh.	Eg.
10	5	49		I.*	Tr.	In.
	7	11		I.*	Sh.	In.
	8	4		I.*	Tr.	Eg.
	9	23		I.*	Sh.	Eg.
	12	50		II.	Tr.	In.
	15	25		II.	Tr.	Eg.
	15	34		II.	Sh.	In.
	18	1		II.	Sh.	Eg.
11	3	10		I.	Oc.	Dis.
11	6	41	54.9	I.*	Ec.	Re.
12	0	18		I.	Tr.	In.
	1	40		I.	Sh.	In.
	2	33		I.	Tr.	Eg.
	3	53		I.	Sh.	Eg.
	6	59		II.*	Oc.	Dis.
	9	34		II.*	Oc.	Re.
	9	47	14.0	II.*	Ec.	Dis.
	12	7	49.4	II.	Ec.	Re.
	21	29		III.	Oc.	Dis.
	21	39		I.	Oc.	Dis.
	23	59		III.	Oc.	Re.
13	1	10	48.6	I.	Ec.	Re.
	3	14	57.1	III.	Ec.	Dis.
	5	3	35.3	III.	Ec.	Re.
	18	48		I.	Tr.	In.
	20	9		I.	Sh.	In.
	21	2		I.	Tr.	Eg.
	22	21		I.	Sh.	Eg.
14	2	10		II.	Tr.	In.
	4	45		II.	Tr.	Eg.
	4	53		II.	Sh.	In.
	7	20		II.*	Sh.	Eg.
	16	8		I.	Oc.	Dis.
	19	39	47.2	I.	Ec.	Re.
15	13	17		I.	Tr.	In.
	14	38		I.	Sh.	In.
	15	31		I.	Tr.	Eg.
	16	50		I.	Sh.	Eg.
	20	19		II.	Oc.	Dis.
	22	53		II.	Oc.	Re.
	23	5	47.7	II.	Ec.	Dis.
16	1	26	14.9	II.	Ec.	Re.
	10	38		I.	Oc.	Dis.
	11	38		III.	Tr.	In.
	14	8		III.	Tr.	Eg.
	14	8	41.9	I.	Ec.	Re.
	17	14		III.	Sh.	In.
	19	17		III.	Sh.	Eg.
17	7	46		I.*	Tr.	In.
	9	6		I.*	Sh.	In.
	10	1		I.*	Tr.	Eg.
	11	19		I.	Sh.	Eg.
	15	30		II.	Tr.	In.
	18	5		II.	Tr.	Eg.
	18	12		II.	Sh.	In.
	20	39		II.	Sh.	Eg.
18	5	7		I.	Oc.	Dis.
	8	37	41.5	I.*	Ec.	Re.
19	2	16		I.	Tr.	In.
	3	35		I.	Sh.	In.
	4	30		I.	Tr.	Eg.
	5	48		I.*	Sh.	Eg.
	9	39		II.*	Oc.	Dis.
	12	14		II.	Oc.	Re.
	12	24	36.3	II.	Ec.	Dis.
	14	44	55.3	II.	Ec.	Re.
	23	36		I.	Oc.	Dis.
20	1	38		III.	Oc.	Dis.
	3	6	34.6	I.	Ec.	Re.
	4	8		III.	Oc.	Re.
	7	18	16.5	III.*	Ec.	Dis.
	9	5	41.9	III.*	Ec.	Re.
	20	45		I.	Tr.	In.
	22	4		I.	Sh.	In.
	22	59		I.	Tr.	Eg.
21	0	17		I.	Sh.	Eg.
	4	51		II.	Tr.	In.
	7	25		II.*	Tr.	Eg.
	7	31		II.*	Sh.	In.
	9	58		II.*	Sh.	Eg.
21	18	6		I.	Oc.	Dis.
	21	35	32.2	I.	Ec.	Re.
22	15	14		I.	Tr.	In.
	16	33		I.	Sh.	In.
	17	29		I.	Tr.	Eg.
	18	46		I.	Sh.	Eg.
	23	0		II.	Oc.	Dis.
23	1	35		II.	Oc.	Re.
	1	43	12.1	II.	Ec.	Dis.
	4	3	22.9	II.	Ec.	Re.
	12	35		I.	Oc.	Dis.
	15	48		III.	Tr.	In.
	16	4	26.9	I.	Ec.	Re.
	18	18		III.	Tr.	Eg.
	21	16		III.	Sh.	In.
	23	18		III.	Sh.	Eg.
24	9	44		I.*	Tr.	In.
	11	2		I.	Sh.	In.
	11	58		I.	Tr.	Eg.
	13	15		I.	Sh.	Eg.
	18	12		II.	Tr.	In.
	20	47		II.	Tr.	Eg.
	20	50		II.	Sh.	In.
	23	17		II.	Sh.	Eg.
25	7	5		I.*	Oc.	Dis.
	10	33	24.9	I.	Ec.	Re.
26	4	14		I.	Tr.	In.
	5	31		I.*	Sh.	In.
	6	28		I.*	Tr.	Eg.
	7	44		I.*	Sh.	Eg.
	12	21		II.	Oc.	Dis.
	14	56		II.	Oc.	Re.
	15	2	6.5	II.	Ec.	Dis.
	17	22	9.1	II.	Ec.	Re.
27	1	35		I.	Oc.	Dis.
	5	2	17.5	I.	Ec.	Re.
	5	50		III.*	Oc.	Dis.
	8	19		III.*	Oc.	Re.
	11	20	55.2	III.	Ec.	Dis.
	13	7	9.6	III.	Ec.	Re.
	22	43		I.	Tr.	In.
28	0	0		I.	Sh.	In.
	0	58		I.	Tr.	Eg.
	2	13		I.	Sh.	Eg.
	7	34		II.*	Tr.	In.
	10	8		II.*	Tr.	Eg.
	10	9		II.*	Sh.	In.
	12	36		II.	Sh.	Eg.
	20	4		I.	Oc.	Dis.
	23	31	14.0	I.	Ec.	Re.
29	17	13		I.	Tr.	In.
	18	29		I.	Sh.	In.
	19	27		I.	Tr.	Eg.
	20	42		I.	Sh.	Eg.
30	1	43		II.	Oc.	Dis.
	4	17		II.	Oc.	Re.
	4	20	44.0	II.	Ec.	Dis.
	6	40	38.4	II.*	Ec.	Re.
	14	34		I.	Oc.	Dis.
	18	0	6.7	I.	Ec.	Re.
	20	3		III.	Tr.	In.
	22	32		III.	Tr.	Eg.
31	1	20		III.	Sh.	In.
	3	20		III.	Sh.	Eg.
	11	42		I.	Tr.	In.
	12	58		I.	Sh.	In.
	13	57		I.	Tr.	Eg.
	15	11		I.	Sh.	Eg.
	20	55		II.	Tr.	In.
	23	28		II.	Sh.	In.
	23	30		II.	Tr.	Eg.

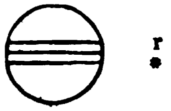
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

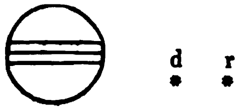
JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

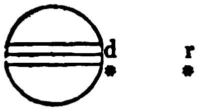
I.



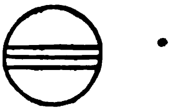
III.



II.



IV. No Eclipse.



Configurations at 9ʰ for an Inverting Telescope.

Day.	West.		East.
1	4· ·2	○	1· 3·
2	4· 3·	○	·2 ·1 ●
3	4· 3· 1·	○	2·
4	4· ·3 ·2	○	·1
5	·4 1··3	○	·2
6	·4	○	1· ·3 2·
7	·4 2· ·1	○	·3
8	2 ·4	○	1· 3·
9	○ 3·	○	·4 ·2 ·1 ●
10	3· 1·	○	2· ·4
11	·3 2·	○	·1 ·4
12	·31·	○	·4 ·2 ●
13		○	·1 ·3 2· 4·
14	·12·	○	·3 4·
15	·2	○	1· 3· 4·
16	·1	○	3· ·2 4·
17	○ 1· ○ 4· 3·	○	2·
18	·3 4·2·	○	·1
19	4· ·3 1· ·2	○	
20	4·	○	·3 ·1 2·
21	4· ·1 2·	○	·3
22	·4 ·2	○	1· 3·
23	·4 ·1	○	3· ·2
24	·4 3·	○	1· 2·
25	3· 2· ·4	○	·1 ●
26	·3 1· ·2	○	·4
27		○	·3 ·1 ·2 ·4
28	○ 2· 1·	○	·3 ·4
29	·2	○	1· 3· ·4
30	·1	○	·23· 4·
31	3·	○	1· 2· 4·

WASHINGTON MEAN TIME.

FEBRUARY.

d	h	m	s			
1	1	55		II.	Sh.	Eg.
	9	4		I.*	Oc.	Dis.
	12	29	4.4	I.	Ec.	Re.
2	6	12		I.*	Tr.	In.
	7	27		I.*	Sh.	In.
	8	27		I.*	Tr.	Eg.
	9	40		I.*	Sh.	Eg.
	15	5		II.	Oc.	Dis.
	17	39		II.	Oc.	Re.
	17	39	44.0	II.	Ec.	Dis.
	19	59	30.2	II.	Ec.	Re.
3	3	34		I.	Oc.	Dis.
	6	57	56.0	I.*	Ec.	Re.
	10	5		III.	Oc.	Dis.
	12	35		III.	Oc.	Re.
	15	23	21.8	III.	Ec.	Dis.
	17	8	26.6	III.	Ec.	Re.
4	0	42		I.	Tr.	In.
	1	56		I.	Sh.	In.
	2	57		I.	Tr.	Eg.
	4	9		I.	Sh.	Eg.
	10	17		II.	Tr.	In.
	12	47		II.	Sh.	In.
	12	51		II.	Tr.	Eg.
	15	14		II.	Sh.	Eg.
	22	3		I.	Oc.	Dis.
5	1	26	51.2	I.	Ec.	Re.
	19	12		I.	Tr.	In.
	20	25		I.	Sh.	In.
	21	26		I.	Tr.	Eg.
	22	37		I.	Sh.	Eg.
6	4	27		II.	Oc.	Dis.
	9	18	1.2	II.	Ec.	Re.
	16	33		I.	Oc.	Dis.
	19	55	43.1	I.	Ec.	Re.
7	0	20		III.	Tr.	In.
	2	49		III.	Tr.	Eg.
	5	23		III.	Sh.	In.
	7	22		III.*	Sh.	Eg.
	13	42		I.	Tr.	In.
	14	53		I.	Sh.	In.
	15	56		I.	Tr.	Eg.
	17	6		I.	Sh.	Eg.
	23	40		II.	Tr.	In.
8	2	6		II.	Sh.	In.
	2	14		II.	Tr.	Eg.
	4	32		II.	Sh.	Eg.
	11	3		I.	Oc.	Dis.
	14	24	39.7	I.	Ec.	Re.
9	8	12		I.*	Tr.	In.
	9	22		I.*	Sh.	In.
	10	26		I.	Tr.	Eg.
	11	35		I.	Sh.	Eg.
	17	50		II.	Oc.	Dis.
	22	36	58.6	II.	Ec.	Re.
10	5	33		I.*	Oc.	Dis.
	8	53	29.9	I.*	Ec.	Re.
	14	23		III.	Oc.	Dis.
	16	52		III.	Oc.	Re.
10	19	25	43.7	III.	Ec.	Dis.
	21	9	39.9	III.	Ec.	Re.
11	2	42		I.	Tr.	In.
	3	51		I.	Sh.	In.
	4	56		I.	Tr.	Eg.
	6	4		I.*	Sh.	Eg.
	13	3		II.	Tr.	In.
	15	24		II.	Sh.	In.
	15	37		II.	Tr.	Eg.
	17	51		II.	Sh.	Eg.
12	0	3		I.	Oc.	Dis.
	3	22	23.7	I.	Ec.	Re.
	21	12		I.	Tr.	In.
	22	20		I.	Sh.	In.
	23	26		I.	Tr.	Eg.
13	0	33		I.	Sh.	Eg.
	7	13		II.*	Oc.	Dis.
	11	55	30.9	II.	Ec.	Re.
	18	33		I.	Oc.	Dis.
	21	51	14.4	I.	Ec.	Re.
14	4	41		III.	Tr.	In.
	7	9		III.*	Tr.	Eg.
	9	26		III.*	Sh.	In.
	11	24		III.	Sh.	Eg.
	15	42		I.	Tr.	In.
	16	49		I.	Sh.	In.
	17	56		I.	Tr.	Eg.
	19	2		I.	Sh.	Eg.
15	2	26		II.	Tr.	In.
	4	43		II.	Sh.	In.
	5	0		II.	Tr.	Eg.
	7	9		II.*	Sh.	Eg.
	13	3		I.	Oc.	Dis.
	16	20	9.4	I.	Ec.	Re.
16	10	12		I.	Tr.	In.
	11	18		I.	Sh.	In.
	12	26		I.	Tr.	Eg.
	13	31		I.	Sh.	Eg.
	20	37		II.	Oc.	Dis.
17	1	14	33.5	II.	Ec.	Re.
	7	33		I.*	Oc.	Dis.
	10	48	58.8	I.	Ec.	Re.
	18	45		III.	Oc.	Dis.
	21	13		III.	Oc.	Re.
	23	28	7.7	III.	Ec.	Dis.
18	1	10	57.3	III.	Ec.	Re.
	4	42		I.	Tr.	In.
	5	47		I.*	Sh.	In.
	6	57		I.*	Tr.	Eg.
	8	0		I.*	Sh.	Eg.
	15	50		II.	Tr.	In.
	18	2		II.	Sh.	In.
	18	23		II.	Tr.	Eg.
	20	28		II.	Sh.	Eg.
19	2	4		I.	Oc.	Dis.
	5	17	51.4	I.	Ec.	Re.
	23	12		I.	Tr.	In.
20	0	16		I.	Sh.	In.
20	1	27		I.	Tr.	Eg.
	2	28		I.	Sh.	Eg.
	10	1		II.	Oc.	Dis.
	14	33	6.8	II.	Ec.	Re.
	20	34		I.	Oc.	Dis.
	23	46	40.6	I.	Ec.	Re.
21	9	4		III.*	Tr.	In.
	11	31		III.	Tr.	Eg.
	13	29		III.	Sh.	In.
	15	26		III.	Sh.	Eg.
	17	42		I.	Tr.	In.
	18	45		I.	Sh.	In.
	19	57		I.	Tr.	Eg.
	20	57		I.	Sh.	Eg.
22	5	14		II.	Tr.	In.
	7	20		II.*	Sh.	In.
	7	47		II.*	Tr.	Eg.
	9	46		II.	Sh.	Eg.
	15	4		I.	Oc.	Dis.
	18	15	34.4	I.	Ec.	Re.
23	12	13		I.	Tr.	In.
	13	14		I.	Sh.	In.
	14	27		I.	Tr.	Eg.
	15	26		I.	Sh.	Eg.
	23	25		II.	Oc.	Dis.
24	3	52	14.6	II.	Ec.	Re.
	9	34		I.	Oc.	Dis.
	12	44	22.7	I.	Ec.	Re.
	23	10		III.	Oc.	Dis.
25	1	36		III.	Oc.	Re.
	3	31	2.6	III.	Ec.	Dis.
	5	12	47.2	III.	Ec.	Re.
	6	43		I.*	Tr.	In.
	7	43		I.*	Sh.	In.
	8	57		I.*	Tr.	Eg.
	9	55		I.	Sh.	Eg.
	18	38		II.	Tr.	In.
	20	39		II.	Sh.	In.
	21	10		II.	Tr.	Eg.
	23	4		II.	Sh.	Eg.
26	4	4		I.	Oc.	Dis.
	7	13	13.6	I.*	Ec.	Re.
27	1	13		I.	Tr.	In.
	2	11		I.	Sh.	In.
	3	27		I.	Tr.	Eg.
	4	24		I.	Sh.	Eg.
	12	50		II.	Oc.	Dis.
	17	10	48.5	II.	Ec.	Re.
	22	35		I.	Oc.	Dis.
28	1	42	1.5	I.	Ec.	Re.
	13	28		III.	Tr.	In.
	15	54		III.	Tr.	Eg.
	17	31		III.	Sh.	In.
	19	27		III.	Sh.	Eg.
	19	44		I.	Tr.	In.
	20	41		I.	Sh.	In.
	21	58		I.	Tr.	Eg.
	22	53		I.	Sh.	Eg.

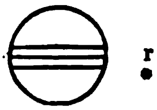
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

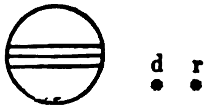
FEBRUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

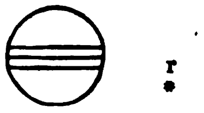
I.



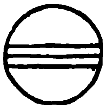
III.



II.



IV. No Eclipse.



Configurations at 8h for an Inverting Telescope.

Day.	West.		East.
1	3· 2· ·1	○	4·
2	○ 1· ·3 ·2	○	4·
3	4··3	○	·1 ·2
4	4· 1·	○	2· ·3
5	4· 2·	○	·1 3·
6	4· ·1	○	·2 3·
7	4· 3·	○	1· 2·
8	·4 3· 2· ·1	○	
9	·4 ·3 ·2	○	1·
10	·4 ·3	○	·1 ·2
11	1· ·4	○	2· ·3
12	2·	○	·1 ·4 ·3
13	1·	○	3· ·4 ·2●
14	3·	○	1· 2· ·4
15	3· ·12·	○	·4
16	·3 ·2	○	1· 4·
17	·3	○	·2 4· ·1●
18	1·	○	2· ·3 4·
19	2·	○	·1 4· ·3
20	1· 4· ·2	○	3·
21	4·	○	3· ·1 ·2
22	4· 3· ·1 2·	○	
23	4· ·3 ·2	○	1·
24	·4 ·3 ·1	○	·2
25	○ 1· ·4	○	·3 2·
26	·4 2·	○	·1 ·3
27	·4 1··2	○	3·
28		○	3· ·1 ·2 ·4●

WASHINGTON MEAN TIME.

MARCH.

d	h	m	s			
1	8	2		II.*	Tr.	In.
	9	57		II.	Sh.	In.
	10	34		II.	Tr.	Eg.
	12	23		II.	Sh.	Eg.
	17	5		I.	Oc.	Dis.
	20	10	53.5	I.	Ec.	Re.
2	14	14		I.	Tr.	In.
	15	9		I.	Sh.	In.
	16	28		I.	Tr.	Eg.
	17	21		I.	Sh.	Eg.
3	2	15		II.	Oc.	Dis.
	6	30	0.9	II.*	Ec.	Re.
	11	35		I.	Oc.	Dis.
	14	39	40.6	I.	Ec.	Re.
4	3	36		III.	Oc.	Dis.
	6	1		III.	Oc.	Re.
	7	33	28.9	III.*	Ec.	Dis.
	8	44		I.	Tr.	In.
	9	14	10.7	III.	Ec.	Re.
	9	38		I.	Sh.	In.
	10	58		I.	Tr.	Eg.
	11	50		I.	Sh.	Eg.
	21	26		II.	Tr.	In.
	23	16		II.	Sh.	In.
	23	58		II.	Tr.	Eg.
5	1	41		II.	Sh.	Eg.
	6	5		I.	Oc.	Dis.
	9	8	30.0	I.	Ec.	Re.
6	3	15		I.	Tr.	In.
	4	7		I.	Sh.	In.
	5	29		I.	Tr.	Eg.
	6	19		I.	Sh.	Eg.
	15	40		II.	Oc.	Dis.
	19	48	34.8	II.	Ec.	Re.
7	0	36		I.	Oc.	Dis.
	3	37	16.6	I.	Ec.	Re.
	17	56		III.	Tr.	In.
	20	20		III.	Tr.	Eg.
	21	33		III.	Sh.	In.
	21	45		I.	Tr.	In.
	22	36		I.	Sh.	In.
	23	28		III.	Sh.	Eg.
	23	59		I.	Tr.	Eg.
8	0	48		I.	Sh.	Eg.
	10	50		II.	Tr.	In.
	12	34		II.	Sh.	In.
	13	23		II.	Tr.	Eg.
	14	59		II.	Sh.	Eg.
	19	6		I.	Oc.	Dis.
	22	6	7.4	I.	Ec.	Re.
9	16	15		I.	Tr.	In.
	17	5		I.	Sh.	In.
	18	29		I.	Tr.	Eg.
	19	17		I.	Sh.	Eg.
10	5	5		II.	Oc.	Dis.
	9	7	51.2	II.	Ec.	Re.
	13	37		I.	Oc.	Dis.
	16	34	53.2	I.	Ec.	Re.
11	8	4		III.*	Oc.	Dis.
	10	27		III.	Oc.	Re.
	10	46		I.	Tr.	In.
	11	33		I.	Sh.	In.
	11	36	10.0	III.	Ec.	Dis.
	13	0		I.	Tr.	Eg.
11	13	15	50.4	III.	Ec.	Re.
	13	46		I.	Sh.	Eg.
12	0	15		II.	Tr.	In.
	1	52		II.	Sh.	In.
	2	47		II.	Tr.	Eg.
	4	17		II.	Sh.	Eg.
	8	7		I.*	Oc.	Dis.
	11	3	42.3	I.	Ec.	Re.
13	5	16		I.	Tr.	In.
	6	2		I.	Sh.	In.
	7	30		I.*	Tr.	Eg.
	8	15		I.*	Sh.	Eg.
	18	31		II.	Oc.	Dis.
	22	26	25.1	II.	Ec.	Re.
14	2	37		I.	Oc.	Dis.
	5	32	26.2	I.	Ec.	Re.
	22	25		III.	Tr.	In.
	23	47		I.	Tr.	In.
15	0	31		I.	Sh.	In.
	0	46		III.	Tr.	Eg.
	1	35		III.	Sh.	In.
	2	1		I.	Tr.	Eg.
	2	43		I.	Sh.	Eg.
	3	29		III.	Sh.	Eg.
	13	40		II.	Tr.	In.
	15	11		II.	Sh.	In.
	16	11		II.	Tr.	Eg.
	17	35		II.	Sh.	Eg.
	21	8		I.	Oc.	Dis.
16	0	1	15.4	I.	Ec.	Re.
	18	17		I.	Tr.	In.
	19	0		I.	Sh.	In.
	20	31		I.	Tr.	Eg.
	21	13		I.	Sh.	Eg.
17	7	57		II.*	Oc.	Dis.
	11	45	45.2	II.	Ec.	Re.
	15	38		I.	Oc.	Dis.
	18	30	0.0	I.	Ec.	Re.
18	12	34		III.	Oc.	Dis.
	12	48		I.	Tr.	In.
	13	29		I.	Sh.	In.
	14	54		III.	Oc.	Re.
	15	2		I.	Tr.	Eg.
	15	38	7.9	III.	Ec.	Dis.
	15	40		I.	Sh.	Eg.
	17	16	49.5	III.	Ec.	Re.
19	3	5		II.	Tr.	In.
	4	29		II.	Sh.	In.
	5	36		II.	Tr.	Eg.
	6	54		II.*	Sh.	Eg.
	10	9		I.	Oc.	Dis.
	12	58	46.0	I.	Ec.	Re.
20	7	18		I.*	Tr.	In.
	7	58		I.*	Sh.	In.
	9	32		I.	Tr.	Eg.
	10	10		I.	Sh.	Eg.
	21	22		II.	Oc.	Dis.
21	1	4	19.0	II.	Ec.	Re.
	4	39		I.	Oc.	Dis.
	7	27	29.8	I.*	Ec.	Re.
22	1	49		I.	Tr.	In.
	2	27		I.	Sh.	In.
	2	55		III.	Tr.	In.
	4	2		I.	Tr.	Eg.
22	4	39		I.	Sh.	Eg.
	5	15		III.	Tr.	Eg.
	5	38		III.	Sh.	In.
	7	31		III.	Sh.	Eg.
	16	30		II.	Tr.	In.
	17	47		II.	Sh.	In.
	19	4		II.	Tr.	Eg.
	20	12		II.	Sh.	Eg.
	23	10		I.	Oc.	Dis.
23	1	56	17.1	I.	Ec.	Re.
	20	19		I.	Tr.	In.
	20	55		I.	Sh.	In.
	22	33		I.	Tr.	Eg.
	23	8		I.	Sh.	Eg.
24	10	49		II.	Oc.	Dis.
	14	23	42.7	II.	Ec.	Re.
	17	40		I.	Oc.	Dis.
	20	25	0.3	I.	Ec.	Re.
25	14	50		I.	Tr.	In.
	15	24		I.	Sh.	In.
	17	3		I.	Tr.	Eg.
	17	4		III.	Oc.	Dis.
	17	37		I.	Sh.	Eg.
	19	22		III.	Oc.	Re.
	19	39	51.0	III.	Ec.	Dis.
	21	17	35.8	III.	Ec.	Re.
26	5	55		II.	Tr.	In.
	7	5		II.*	Sh.	In.
	8	31		II.	Tr.	Eg.
	9	30		II.	Sh.	Eg.
	12	10		I.	Oc.	Dis.
	14	53	44.8	I.	Ec.	Re.
27	9	21		I.	Tr.	In.
	9	53		I.	Sh.	In.
	11	35		I.	Tr.	Eg.
	12	6		I.	Sh.	Eg.
28	0	15		II.	Oc.	Dis.
	3	42	15.9	II.	Ec.	Re.
	6	41		I.*	Oc.	Dis.
	9	22	27.0	I.	Ec.	Re.
29	3	52		I.	Tr.	In.
	4	22		I.	Sh.	In.
	6	5		I.	Tr.	Eg.
	6	35		I.	Sh.	Eg.
	7	27		III.*	Tr.	In.
	9	41		III.	Sh.	In.
	9	44		III.	Tr.	Eg.
	11	33		III.	Sh.	Eg.
	19	21		II.	Tr.	In.
	20	23		II.	Sh.	In.
	21	59		II.	Tr.	Eg.
	22	47		II.	Sh.	Eg.
30	1	19		I.	Oc.	Dis.
	3	51	12.7	I.	Ec.	Re.
	22	22		I.	Tr.	In.
	22	51		I.	Sh.	In.
31	0	36		I.	Tr.	Eg.
	1	4		I.	Sh.	Eg.
	13	41		II.	Oc.	Dis.
	17	1	42.6	II.	Ec.	Re.
	19	42		I.	Oc.	Dis.
	22	19	54.7	I.	Ec.	Re.

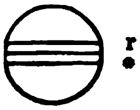
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

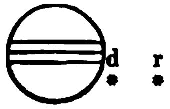
MARCH.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

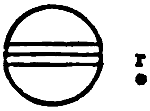
I.



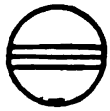
III.



II.



IV. No Eclipse.



Configurations at 7h for an Inverting Telescope.

Day.	West.		East.
1	3· 1·	○	2· ·4
2	3· ·2	○	1· ·4
3	·3 ·1	○	·2 ·4
4		○	1· ·3 2· ·4
5	2·	○	·3 4· ·1 ●
6	·2 1·	○	3· 4·
7		○	·13· ·2 4·
8	1· 3·	○	2· 4·
9	3· 2· 4·	○	1·
10	4· ·3 ·1	○	·2 ●
11	4· ·3	○	1· 2·
12	4· 2· ·1	○	·3
13	○ 1· ·4 ·2	○	3·
14	·4	○	·1 ·23·
15	·4 1· 3·	○	2·
16	3· 2· ·4	○	·1
17	·3 ·1 ·2	○	·4 ●
18	·3	○	1· 2· ·4
19	·12·	○	·3 ·4
20	·2	○	1· ·3 ·4
21		○	·1 ·2 3· ·4
22	1· 3·	○	2· 4·
23	3· 2·	○	·1 4·
24	·3 1· ·2	○	4·
25	·3	○	4· 1· ·2
26	○ 2· 4· ·1	○	·3
27	4· ·2	○	1· ·3
28	4·	○	·2 3· ·1 ●
29	○ 3· 4· 1·	○	2·
30	·4 3· 2·	○	·1
31	·4 ·3 1· ·2	○	

WASHINGTON MEAN TIME.

MAY.

THE SATELLITES OF JUPITER

ARE INVISIBLE FROM APRIL 1st UNTIL MAY 25th,

JUPITER BEING TOO NEAR THE SUN.

d	h	m	s				d	h	m	s				d	h	m	s			
25	17	0		I.	Ec.	Dis.	**27**	11	49	17.1	II.	Ec.	Dis.	**29**	9	53		III.	Oc.	Dis.
	17	6		II.	Sh.	In.		14	10		I.	Oc.	Re.		9	53		II.	Tr.	Eg.
	17	55		III.	Sh.	In.		15	13		II.	Oc.	Re.		11	49		III.	Oc.	Re.
	18	5		II.	Tr.	In.	**28**	8	41		I.	Sh.	In.	**30**	3	9		I.	Sh.	In.
	19	28		II.	Sh.	Eg.		9	12		I.	Tr.	In.		3	43		I.	Tr.	In.
	19	39		I.	Oc.	Re.		10	53		I.	Sh.	Eg.		5	22		I.	Sh.	Eg.
	19	42		III.	Sh.	Eg.		11	25		I.	Tr.	Eg.		5	55		I.	Tr.	Eg.
	19	44		III.	Tr.	In.	**29**	5	57	19.9	I.	Ec.	Dis.	**31**	0	25	51.0	I.	Ec.	Dis.
	20	25		II.	Tr.	Eg.		6	23		II.	Sh.	In.		1	7	40.3	II.	Ec.	Dis.
	21	46		III.	Tr.	Eg.		7	29		II.	Tr.	In.		3	10		I.	Oc.	Re.
26	14	12		I.	Sh.	In.		7	52	19.9	III.	Ec.	Dis.		4	38		II.	Oc.	Re.
	14	42		I.	Tr.	In.		8	40		I.	Oc.	Re.		21	38		I.	Sh.	In.
	16	24		I.	Sh.	Eg.		8	45		II.	Sh.	Eg.		22	13		I.	Tr.	In.
	16	54		I.	Tr.	Eg.		9	23	21.7	III.	Ec.	Re.		23	50		I.	Sh.	Eg.
27	11	28	48.3	I.	Ec.	Dis.														

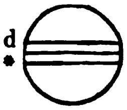
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

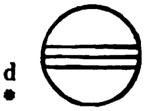
MAY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

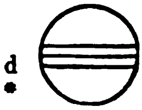
I.



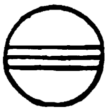
III.



II.



IV. No Eclipse.



Configurations at 15ʰ for an Inverting Telescope.

Day.	West.		East.
25	• ·1	○	3· 2· ·4 •
26	○ 1· 3· 2·	○	·4
27	3·	○	·1 ·4 ·2 ●
28	·3 1·	○	2· 4·
29	2·	○	·3 ·1 4·
30	·21·	○	·34·
31		○	4· 1· ·2 3·

WASHINGTON MEAN TIME.

JUNE.

d	h	m	s			
1	0	26		I.	Tr.	Eg.
	18	54	23.0	I.	Ec.	Dis.
	19	40		II.	Sh.	In.
	20	54		II.	Tr.	In.
	21	40		I.	Oc.	Re.
	21	56		III.	Sh.	In.
	22	3		II.	Sh.	Eg.
	23	17		II.	Tr.	Eg.
	23	43		III.	Sh.	Eg.
2	0	19		III.	Tr.	In.
	2	14		III.	Tr.	Eg.
	16	7		I. *	Sh.	In.
	16	42		I.	Tr.	In.
	18	19		I.	Sh.	Eg.
	18	56		I.	Tr.	Eg.
3	13	22	55.3	I.	Ec.	Dis.
	14	27	8.9	II.	Ec.	Dis.
	16	11		I. *	Oc.	Re.
	18	4		II.	Oc.	Re.
4	10	35		I.	Sh.	In.
	11	11		I.	Tr.	In.
	12	48		I.	Sh.	Eg.
	13	26		I.	Tr.	Eg.
5	7	51	25.3	I.	Ec.	Dis.
	8	58		II.	Sh.	In.
	10	18		II.	Tr.	In.
	10	41		I.	Oc.	Re.
	11	20		II.	Sh.	Eg.
	11	53	41.4	III.	Ec.	Dis.
	12	41		II.	Tr.	Eg.
	13	24	11.8	III.	Ec.	Re.
	14	23		III.	Oc.	Dis.
	16	17		III.	Oc.	Re.
6	5	4		I.	Sh.	In.
	5	39		I.	Tr.	In.
	7	16		I.	Sh.	Eg.
	7	57		I.	Tr.	Eg.
7	2	19	55.6	I.	Ec.	Dis.
	3	45	28.6	II.	Ec.	Dis.
	5	11		I.	Oc.	Re.
	7	29		II.	Oc.	Re.
	23	33		I.	Sh.	In.
8	0	8		I.	Tr.	In.
	1	45		I.	Sh.	Eg.
	2	27		I.	Tr.	Eg.
	20	48	26.2	I.	Ec.	Dis.
	22	15		II.	Sh.	In.
	23	41		I.	Oc.	Re.
	23	42		II.	Tr.	In.
9	0	37		II.	Sh.	Eg.
	1	58		III.	Sh.	In.
	2	5		II.	Tr.	Eg.
	3	43		III.	Sh.	Eg.
	4	49		III.	Tr.	In.
	6	41		III.	Tr.	Eg.
	18	1		I.	Sh.	In.
	18	37		I.	Tr.	In.
	20	13		I.	Sh.	Eg.
	20	57		I.	Tr.	Eg.
10	15	16	57.5	I. *	Ec.	Dis.
	17	4	53.1	II.	Ec.	Dis.
	18	11		I.	Oc.	Re.
	20	55		II.	Oc.	Re.
11	12	30		I.	Sh.	In.
	13	5		I.	Tr.	In.
	14	42		I.	Sh.	Eg.
	15	28		I. *	Tr.	Eg.
12	9	45	26.7	I.	Ec.	Dis.
	11	33		II.	Sh.	In.
	12	41		I.	Oc.	Re.
	13	7		II.	Tr.	In.
	13	54		II.	Sh.	Eg.
	15	29		II. *	Tr.	Eg.
	15	54	31.6	III. *	Ec.	Dis.
	17	24	33.6	III.	Ec.	Re.
	18	52		III.	Oc.	Dis.
	20	42		III.	Oc.	Re.
13	6	59		I.	Sh.	In.
	7	37		I.	Tr.	In.
	9	11		I.	Sh.	Eg.
	9	58		I.	Tr.	Eg.
14	4	13	56.1	I.	Ec.	Dis.
	6	23	10.0	II.	Ec.	Dis.
	7	11		I.	Oc.	Re.
	10	19		II.	Oc.	Re.
15	1	27		I.	Sh.	In.
	2	9		I.	Tr.	In.
	3	40		I.	Sh.	Eg.
	4	28		I.	Tr.	Eg.
	22	42	25.6	I.	Ec.	Dis.
16	0	50		II.	Sh.	In.
	1	41		I.	Oc.	Re.
	2	30		II.	Tr.	In.
	3	11		II.	Sh.	Eg.
	4	52		II.	Tr.	Eg.
	5	58		III.	Sh.	In.
	7	44		III.	Sh.	Eg.
	9	17		III.	Tr.	In.
	11	6		III.	Tr.	Eg.
	19	56		I.	Sh.	In.
	20	41		I.	Tr.	In.
	22	8		I.	Sh.	Eg.
	22	58		I.	Tr.	Eg.
17	17	10	56.3	I.	Ec.	Dis.
	19	42	30.2	II.	Ec.	Dis.
	20	11		I.	Oc.	Re.
	23	45		II.	Oc.	Re.
18	14	25		I.	Sh.	In.
	15	13		I. *	Tr.	In.
	16	37		I.	Sh.	Eg.
	17	28		I.	Tr.	Eg.
19	11	39	24.4	I.	Ec.	Dis.
	14	7		II.	Sh.	In.
	14	41		I. *	Oc.	Re.
	15	54		II. *	Tr.	In.
	16	29		II.	Sh.	Eg.
	18	15		II.	Tr.	Eg.
	19	55	33.3	III.	Ec.	Dis.
	21	25	9.7	III.	Ec.	Re.
	23	19		III.	Oc.	Dis.
20	1	7		III.	Oc.	Re.
	8	53		I.	Sh.	In.
	9	44		I.	Tr.	In.
	11	5		I.	Sh.	Eg.
	11	58		I.	Tr.	Eg.
21	6	7	52.9	I.	Ec.	Dis.
21	9	0	43.8	II.	Ec.	Dis.
	9	11		I.	Oc.	Re.
	13	9		II.	Oc.	Re.
22	3	22		I.	Sh.	In.
	4	17		I.	Tr.	In.
	5	34		I.	Sh.	Eg.
	6	29		I.	Tr.	Eg.
23	0	36	21.2	I.	Ec.	Dis.
	3	25		II.	Sh.	In.
	3	41		I.	Oc.	Re.
	5	17		II.	Tr.	In.
	5	46		II.	Sh.	Eg.
	7	39		II.	Tr.	Eg.
	9	59		III.	Sh.	In.
	11	44		III.	Sh.	Eg.
	13	43		III.	Tr.	In.
	15	30		III. *	Tr.	Eg.
	21	51		I.	Sh.	In.
	22	46		I.	Tr.	In.
24	0	3		I.	Sh.	Eg.
	0	59		I.	Tr.	Eg.
	19	4	51.3	I.	Ec.	Dis.
	22	11		I.	Oc.	Re.
	22	19	58.8	II.	Ec.	Dis.
25	2	34		II.	Oc.	Re.
	16	19		I.	Sh.	In.
	17	16		I.	Tr.	In.
	18	31		I.	Sh.	Eg.
	19	29		I.	Tr.	Eg.
26	13	33	18.5	I.	Ec.	Dis.
	16	41		I.	Oc.	Re.
	16	42		II.	Sh.	In.
	18	41		II.	Tr.	In.
	19	4		II.	Sh.	Eg.
	21	2		II.	Tr.	Eg.
	23	55	55.3	III.	Ec.	Dis.
27	1	25	8.9	III.	Ec.	Re.
	3	44		III.	Oc.	Dis.
	5	30		III.	Oc.	Re.
	10	47		I.	Sh.	In.
	11	46		I.	Tr.	In.
	13	0		I.	Sh.	Eg.
	13	58		I.	Tr.	Eg.
28	8	1	46.5	I.	Ec.	Dis.
	11	11		I.	Oc.	Re.
	11	38	9.1	II.	Ec.	Dis.
	15	58		II.	Oc.	Re.
29	5	16		I.	Sh.	In.
	6	16		I.	Tr.	In.
	7	29		I.	Sh.	Eg.
	8	28		I.	Tr.	Eg.
30	2	30	13.9	I.	Ec.	Dis.
	5	40		I.	Oc.	Re.
	6	0		II.	Sh.	In.
	8	3		II.	Tr.	In.
	8	21		II.	Sh.	Eg.
	10	24		II.	Tr.	Eg.
	14	1		III.	Sh.	In.
	15	46		III. *	Sh.	Eg.
	18	8		III.	Tr.	In.
	19	53		III.	Tr.	Eg.
	23	44		I.	Sh.	In.

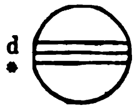
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

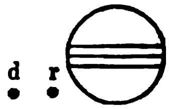
JUNE.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

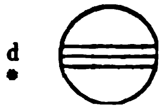
I.



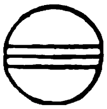
III.



II.



IV. No Eclipse.



Configurations at 15h for an Inverting Telescope.

Day.	West.		East.
1	4· ·1	O	2·3·
2	4· 2· 3·	O	1·
3	4· 3· ·2	O	·1 ●
4	4· ·3 1·	O	2·
5	·4 2·	O	·1 ·3 ●
6	·4 ·2 1·	O	·3
7	·4	O	1· ·2 3·
8	·4 ·1	O	2· 3·
9	2· 3·	O	1· ·4 ●
10	3· ·2 ·1	O	·4
11	O 1· ·3	O	·2 ·4
12	O 2· ·3	O	1· ·4
13	·2 1·	O	·3 ·4
14		O	·2 ·1 3· 4·
15	·1	O	2· 3· 4·
16	2· 3·	O	1· 4·
17	3· ·2 ·1	O	4·
18	·3 4·	O	1· ·2
19	4· ·3	O	·1 2·
20	4· ·2 1·	O	·3
21	4·	O	·2 ·1 ·3
22	·4 1·	O	2· 3·
23	O 3· ·4 2·	O	1·
24	·4 3· ·2 ·1	O	
25	·3 ·4	O	1· ·2
26	·3	O	·4 2· ·1 ●
27	2· 1·	O	·3 ·4
28		O	·1 ·3 ·4 ·2 ●
29	1·	O	2· 3· ·4
30	2·	O	3· ·1 ·4

WASHINGTON MEAN TIME.

JULY.

d	h	m	s			
1	0	46		I.	Tr.	In.
	1	57		I.	Sh.	Eg.
	2	58		I.	Tr.	Eg.
	20	58	43.3	I.	Ec.	Dis.
2	0	10		I.	Oc.	Re.
	0	57	17.8	II.	Ec.	Dis.
	5	22		II.	Oc.	Re.
	18	14		I.	Sh.	In.
	19	16		I.	Tr.	In.
	20	26		I.	Sh.	Eg.
	21	29		I.	Tr.	Eg.
3	15	27	9.6	I. *	Ec.	Dis.
	18	40		I.	Oc.	Re.
	19	17		II.	Sh.	In.
	21	26		II.	Tr.	In.
	21	38		II.	Sh.	Eg.
	23	46		II.	Tr.	Eg.
4	3	56	4.9	III.	Ec.	Dis.
	5	24	58.3	III.	Ec.	Re.
	8	7		III.	Oc.	Dis.
	9	50		III.	Oc.	Re.
	12	42		I.	Sh.	In.
	13	46		I. *	Tr.	In.
	14	54		I. *	Sh.	Eg.
	15	58		I. *	Tr.	Eg.
5	9	55	37.0	I.	Ec.	Dis.
	13	10		I.	Oc.	Re.
	14	15	24.2	II. *	Ec.	Dis.
	18	45		II.	Oc.	Re.
6	7	11		I.	Sh.	In.
	8	16		I.	Tr.	In.
	9	23		I.	Sh.	Eg.
	10	28		I.	Tr.	Eg.
7	4	24	3.5	I.	Ec.	Dis.
	7	39		I.	Oc.	Re.
	8	35		II.	Sh.	In.
	10	48		II.	Tr.	In.
	10	55		II.	Sh.	Eg.
	13	8		II.	Tr.	Eg.
	18	1		III.	Sh.	In.
	19	46		III.	Sh.	Eg.
	22	31		III.	Tr.	In.
8	0	13		III.	Tr.	Eg.
	1	40		I.	Sh.	In.
	2	45		I.	Tr.	In.
	3	52		I.	Sh.	Eg.
	4	58		I.	Tr.	Eg.
	22	52	32.7	I.	Ec.	Dis.
9	2	9		I.	Oc.	Re.
	3	34	27.1	II.	Ec.	Dis.
	8	9		II.	Oc.	Re.
	20	8		I.	Sh.	In.
	21	15		I.	Tr.	In.
	22	20		I.	Sh.	Eg.
	23	27		I.	Tr.	Eg.
10	17	20	58.2	I.	Ec.	Dis.
	20	39		I.	Oc.	Re.
	21	52		II.	Sh.	In.
11	0	11		II.	Tr.	In.
	0	13		II.	Sh.	Eg.
	2	31		II.	Tr.	Eg.
	7	56	16.5	III.	Ec.	Dis.
	9	24	52.9	III.	Ec.	Re.
	12	28		III.	Oc.	Dis.
	14	9		III. *	Oc.	Re.
	14	37		I. *	Sh.	In.
	15	45		I. *	Tr.	In.
11	16	49		I.	Sh.	Eg.
	17	57		I.	Tr.	Eg.
12	11	49	25.1	I.	Ec.	Dis.
	15	8		I. *	Oc.	Re.
	16	52	29.7	II.	Ec.	Dis.
	19	7	24.9	II.	Ec.	Re.
	19	12		II.	Oc.	Dis.
	21	31		II.	Oc.	Re.
13	9	5		I.	Sh.	In.
	10	15		I.	Tr.	In.
	11	17		I.	Sh.	Eg.
	12	27		I.	Tr.	Eg.
14	6	17	51.1	I.	Ec.	Dis.
	9	38		I.	Oc.	Re.
	11	9		II.	Sh.	In.
	13	30		II. *	Sh.	Eg.
	13	33		II. *	Tr.	In.
	15	52		II. *	Tr.	Eg.
	22	3		III.	Sh.	In.
	23	47		III.	Sh.	Eg.
15	2	52		III.	Tr.	In.
	3	34		I.	Sh.	In.
	4	31		III.	Tr.	Eg.
	4	45		I.	Tr.	In.
	5	46		I.	Sh.	Eg.
	6	56		I.	Tr.	Eg.
16	0	46	19.9	I.	Ec.	Dis.
	4	7		I.	Oc.	Re.
	6	11	25.9	II.	Ec.	Dis.
	8	26	16.7	II.	Ec.	Re.
	8	35		II.	Oc.	Dis.
	10	54		II.	Oc.	Re.
	22	2		I.	Sh.	In.
	23	14		I.	Tr.	In.
17	0	14		I.	Sh.	Eg.
	1	26		I.	Tr.	Eg.
	19	14	45.3	I.	Ec.	Dis.
	22	37		I.	Oc.	Re.
18	0	26		II.	Sh.	In.
	2	47		II.	Sh.	Eg.
	2	54		II.	Tr.	In.
	5	13		II.	Tr.	Eg.
	11	56	30.5	III.	Ec.	Dis.
	13	24	53.3	III. *	Ec.	Re.
	16	31		I.	Sh.	In.
	16	47		III.	Oc.	Dis.
	17	44		I.	Tr.	In.
	18	25		III.	Oc.	Re.
	18	43		I.	Sh.	Eg.
	19	55		I.	Tr.	Eg.
19	13	43	12.0	I. *	Ec.	Dis.
	17	6		I.	Oc.	Re.
	19	29	25.0	II.	Ec.	Dis.
	21	44	11.4	II.	Ec.	Re.
	21	57		II.	Oc.	Dis.
20	0	16		II.	Oc.	Re.
	11	0		I.	Sh.	In.
	12	13		I.	Tr.	In.
	13	11		I.	Sh.	Eg.
	14	24		I. *	Tr.	Eg.
21	8	11	37.4	I.	Ec.	Dis.
	11	35		I.	Oc.	Re.
	13	43		II. *	Sh.	In.
	16	4		II. *	Sh.	Eg.
	16	15		II. *	Tr.	In.
	18	34		II.	Tr.	Eg.
22	2	3		III.	Sh.	In.
22	3	47		III.	Sh.	Eg.
	5	28		I.	Sh.	In.
	6	43		I.	Tr.	In.
	7	9		III.	Tr.	In.
	7	40		I.	Sh.	Eg.
	8	46		III.	Tr.	Eg.
	8	53		I.	Tr.	Eg.
23	2	40	6.0	I.	Ec.	Dis.
	6	5		I.	Oc.	Re.
	8	48	14.2	II.	Ec.	Dis.
	11	2	56.4	II.	Ec.	Re.
	11	19		II.	Oc.	Dis.
	13	38		II. *	Oc.	Re.
	23	57		I.	Sh.	In.
24	1	12		I.	Tr.	In.
	2	9		I.	Sh.	Eg.
	3	24		I.	Tr.	Eg.
	21	8	30.7	I.	Ec.	Dis.
25	0	34		I.	Oc.	Re.
	3	1		II.	Sh.	In.
	5	22		II.	Sh.	Eg.
	5	37		II.	Tr.	In.
	7	55		II.	Tr.	Eg.
	15	57	19.4	III. *	Ec.	Dis.
	17	25	31.8	III.	Ec.	Re.
	18	25		I.	Sh.	In.
	19	42		I.	Tr.	In.
	20	37		I.	Sh.	Eg.
	21	3		III.	Oc.	Dis.
	21	54		I.	Tr.	Eg.
	22	39		III.	Oc.	Re.
26	15	36	57.3	I. *	Ec.	Dis.
	19	3		I.	Oc.	Re.
	22	6	9.8	II.	Ec.	Dis.
27	0	20	47.8	II.	Ec.	Re.
	0	40		II.	Oc.	Dis.
	2	59		II.	Oc.	Re.
	12	54		I.	Sh.	In.
	14	11		I. *	Tr.	In.
	15	6		I. *	Sh.	Eg.
	16	23		I.	Tr.	Eg.
28	10	5	22.2	I.	Ec.	Dis.
	13	32		I. *	Oc.	Re.
	16	18		II. *	Sh.	In.
	18	39		II.	Sh.	Eg.
	18	57		II.	Tr.	In.
	21	15		II.	Tr.	Eg.
29	6	3		III.	Sh.	In.
	7	22		I.	Sh.	In.
	7	47		III.	Sh.	Eg.
	8	40		I.	Tr.	In.
	9	34		I.	Sh.	Eg.
	10	52		I.	Tr.	Eg.
	11	23		III.	Tr.	In.
	12	58		III.	Tr.	Eg.
30	4	33	50.8	I.	Ec.	Dis.
	8	2		I.	Oc.	Re.
	11	24	51.8	II.	Ec.	Dis.
	13	39	25.8	II. *	Ec.	Re.
	14	2		II. *	Oc.	Dis.
	16	20		II.	Oc.	Re.
31	1	51		I.	Sh.	In.
	3	9		I.	Tr.	In.
	4	3		I.	Sh.	Eg.
	5	21		I.	Tr.	Eg.
	23	2	15.1	I.	Ec.	Dis.

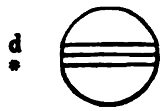
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

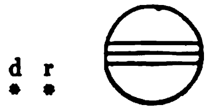
JULY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

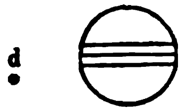
I.



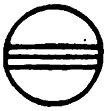
III.



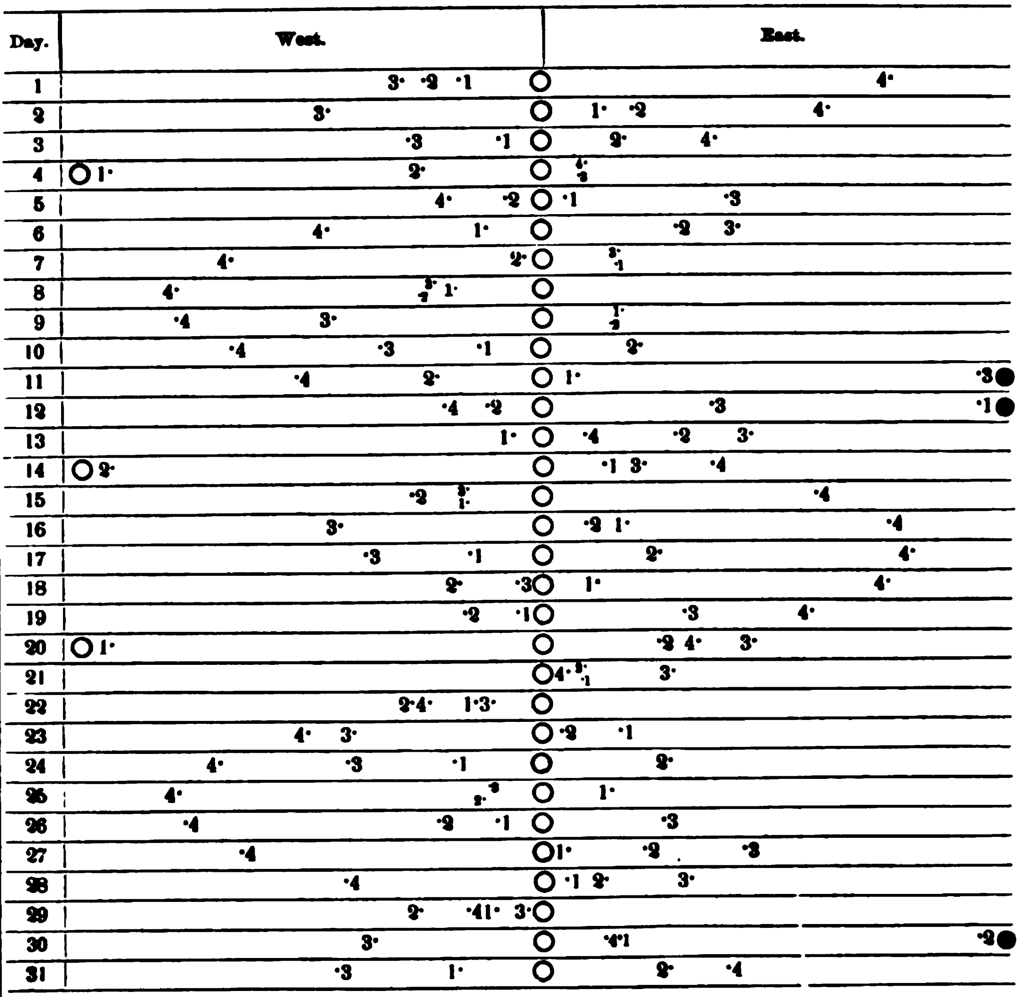
II.



IV. No Eclipse.



Configurations at 14h for an Inverting Telescope.



WASHINGTON MEAN TIME.

AUGUST.

d	h	m	s			
1	2	31		I.	Oc.	Re.
	5	36		II.	Sh.	In.
	7	57		II.	Sh.	Eg.
	8	17		II.	Tr.	In.
	10	35		II.	Tr.	Eg.
	19	57	38.0	III.	Ec.	Dis.
	20	19		I.	Sh.	In.
	21	25	42.6	III.	Ec.	Re.
	21	38		I.	Tr.	In.
	22	31		I.	Sh.	Eg.
	23	50		I.	Tr.	Eg.
2	1	16		III.	Oc.	Dis.
	2	50		III.	Oc.	Re.
	17	30	41.7	I.	Ec.	Dis.
	21	0		I.	Oc.	Re.
3	0	42	43.9	II.	Ec.	Dis.
	2	57	13.9	II.	Ec.	Re.
	3	22		II.	Oc.	Dis.
	5	41		II.	Oc.	Re.
	14	48		I.*	Sh.	In.
	16	8		I.*	Tr.	In.
	17	0		I.	Sh.	Eg.
	18	20		I.	Tr.	Eg.
4	11	59	6.1	I.	Ec.	Dis.
	15	29		I.*	Oc.	Re.
	18	53		II.	Sh.	In.
	21	14		II.	Sh.	Eg.
	21	36		II.	Tr.	In.
	23	55		II.	Tr.	Eg.
5	9	16		I.	Sh.	In.
	10	3		III.	Sh.	In.
	10	37		I.	Tr.	In.
	11	28		I.*	Sh.	Eg.
	11	47		III.*	Sh.	Eg.
	12	49		I.*	Tr.	Eg.
	15	34		III.*	Tr.	In.
	17	7		III.	Tr.	Eg.
6	6	27	34.9	I.	Ec.	Dis.
	9	58		I.	Oc.	Re.
	14	1	18.5	II.*	Ec.	Dis.
	16	15	44.9	II.*	Ec.	Re.
	16	43		II.*	Oc.	Dis.
	19	1		II.	Oc.	Re.
7	3	45		I.	Sh.	In.
	5	6		I.	Tr.	In.
	5	57		I.	Sh.	Eg.
	7	17		I.	Tr.	Eg.
8	0	55	59.4	I.	Ec.	Dis.
	4	26		I.	Oc.	Re.
	8	11		II.	Sh.	In.
	10	32		II.	Sh.	Eg.
	10	57		II.	Tr.	In.
	13	14		II.*	Tr.	Eg.
	22	13		I.	Sh.	In.
	23	35		I.	Tr.	In.
	23	58	9.2	III.	Ec.	Dis.
9	0	25		I.	Sh.	Eg.
	1	26	9.4	III.	Ec.	Re.
	1	46		I.	Tr.	Eg.
	5	26		III.	Oc.	Dis.
	6	57		III.	Oc.	Re.
	19	24	26.0	I.	Ec.	Dis.
	22	55		I.	Oc.	Re.
10	3	19	7.3	II.	Ec.	Dis.
	5	33	29.9	II.	Ec.	Re.
	6	2		II.	Oc.	Dis.
	8	20		II.	Oc.	Re.
	16	42		I.	Sh.	In.
	18	3		I.	Tr.	In.
	18	54		I.	Sh.	Eg.
	20	15		I.	Tr.	Eg.

d	h	m	s			
11	13	52	50.3	I.*	Ec.	Dis.
	17	24		I.	Oc.	Re.
	21	28		II.	Sh.	In.
	23	49		II.	Sh.	Eg.
12	0	15		II.	Tr.	In.
	2	32		II.	Tr.	Eg.
	11	10		I.	Sh.	In.
	12	32		I.*	Tr.	In.
	13	22		I.*	Sh.	Eg.
	14	4		III.*	Sh.	In.
	14	44		I.*	Tr.	Eg.
	15	47		III.*	Sh.	Eg.
	19	42		III.	Tr.	In.
	21	12		III.	Tr.	Eg.
13	8	21	19.3	I.	Ec.	Dis.
	11	54		I.	Oc.	Re.
	16	37	35.0	II.*	Ec.	Dis.
	18	51	54.0	II.	Ec.	Re.
	19	22		II.	Oc.	Dis.
	21	40		II.	Oc.	Re.
14	5	39		I.	Sh.	In.
	7	1		I.	Tr.	In.
	7	51		I.	Sh.	Eg.
	9	13		I.	Tr.	Eg.
15	2	49	43.9	I.	Ec.	Dis.
	6	21		I.	Oc.	Re.
	10	46		II.	Sh.	In.
	13	6		II.*	Sh.	Eg.
	13	33		II.*	Tr.	In.
	15	50		II.*	Tr.	Eg.
16	0	7		I.	Sh.	In.
	1	30		I.	Tr.	In.
	2	19		I.	Sh.	Eg.
	3	42		I.	Tr.	Eg.
	3	58	4.8	III.	Ec.	Dis.
	5	26	3.4	III.	Ec.	Re.
	9	32		III.	Oc.	Dis.
	11	0		III.	Oc.	Re.
	21	18	11.0	I.	Ec.	Dis.
17	0	50		I.	Oc.	Re.
	5	55	20.3	II.	Ec.	Dis.
	8	9	36.1	II.	Ec.	Re.
	8	40		II.	Oc.	Dis.
	10	58		II.	Oc.	Re.
	18	36		I.	Sh.	In.
	19	59		I.	Tr.	In.
	20	48		I.	Sh.	Eg.
	22	10		I.	Tr.	Eg.
18	15	46	35.4	I.*	Ec.	Dis.
	19	19		I.	Oc.	Re.
19	0	3		II.	Sh.	In.
	2	24		II.	Sh.	Eg.
	2	51		II.	Tr.	In.
	5	8		II.	Tr.	Eg.
	13	4		I.*	Sh.	In.
	14	27		I.*	Tr.	In.
	15	16		I.*	Sh.	Eg.
	16	39		I.*	Tr.	Eg.
	18	5		III.	Sh.	In.
	19	48		III.	Sh.	Eg.
	23	47		III.	Tr.	In.
20	1	14		III.	Tr.	Eg.
	10	15	4.8	I.	Ec.	Dis.
	13	47		I *	Oc.	Re.
	19	13	42.4	II	Ec.	Dis.
	21	27	55.2	II	Ec.	Re.
	21	59		II.	Oc.	Dis.
21	0	16		II.	Oc.	Re.
	7	33		I.	Sh.	In.
	8	56		I.	Tr.	In.
	9	45		I.	Sh.	Eg.

d	h	m	s			
21	11	7		I.*	Tr.	Eg.
22	4	43	29.7	I.	Ec.	Dis.
	8	15		I.	Oc.	Re.
	13	21		II.*	Sh.	In.
	15	41		II.*	Sh.	Eg.
	16	9		II.*	Tr.	In.
	18	27		II.	Tr.	Eg.
23	2	1		I.	Sh.	In.
	3	24		I.	Tr.	In.
	4	13		I.	Sh.	Eg.
	5	36		I.	Tr.	Eg.
	7	57	51.7	III.	Ec.	Dis.
	9	25	52.3	III.	Ec.	Re.
	13	34		III.*	Oc.	Dis.
	15	0		III.*	Oc.	Re.
	23	11	57.4	I.	Ec.	Dis.
24	2	44		I.	Oc.	Re.
	8	31	22.4	II.	Ec.	Dis.
	10	45	32.8	II.*	Ec.	Re.
	11	17		II.*	Oc.	Dis.
	13	34		II.*	Oc.	Re.
	20	30		I.	Sh.	In.
	21	53		I.	Tr.	In.
	22	42		I.	Sh.	Eg.
25	0	4		I.	Tr.	Eg.
	17	40	21.7	I.	Ec.	Dis.
	21	12		I.	Oc.	Re.
26	2	39		II.	Sh.	In.
	4	59		II.	Sh.	Eg.
	5	26		II.	Tr.	In.
	7	43		II.	Tr.	Eg.
	14	58		I.*	Sh.	In.
	16	21		I.*	Tr.	In.
	17	10		I.	Sh.	Eg.
	18	32		I.	Tr.	Eg.
	22	5		III.	Sh.	In.
	23	48		III.	Sh.	Eg.
27	3	47		III.	Tr.	In.
	5	12		III.	Tr.	Eg.
	12	8	51.7	I.*	Ec.	Dis.
	15	41		I.*	Oc.	Re.
	21	49	35.0	II.	Ec.	Dis.
28	0	3	43.2	II.	Ec.	Re.
	0	34		II.	Oc.	Dis.
	2	51		II.	Oc.	Re.
	9	27		I.	Sh.	In.
	10	49		I.*	Tr.	In.
	11	39		I.*	Sh.	Eg.
	13	0		I.*	Tr.	Eg.
29	6	37	16.9	I.	Ec.	Dis.
	10	9		I.	Oc.	Re.
	15	56		II.*	Sh.	In.
	18	17		II.	Sh.	Eg.
	18	42		II.	Tr.	In.
	20	59		II.	Tr.	Eg.
30	3	55		I.	Sh.	In.
	5	17		I.	Tr.	In.
	6	7		I.	Sh.	Eg.
	7	29		I.	Tr.	Eg.
	11	57	45.5	III.*	Ec.	Dis.
	13	25	52.7	III.*	Ec.	Re.
	17	31		III.	Oc.	Dis.
	18	55		III.	Oc.	Re.
31	1	5	45.5	I.	Ec.	Dis.
	4	37		I.	Oc.	Re.
	11	7	14.1	II.*	Ec.	Dis.
	13	21	20.3	II.*	Ec.	Re.
	13	50		II.*	Oc.	Dis.
	16	7		II.*	Oc.	Re.
	22	24		I.	Sh.	In.
	23	45		I.	Tr.	In.

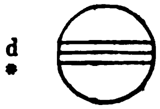
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

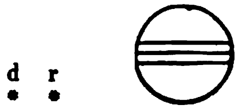
AUGUST.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

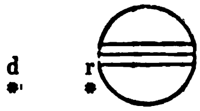
I.



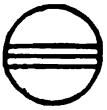
III.



II.



IV. No Eclipse.



Configurations at 13ʰ for an Inverting Telescope.

Day.	West.		East.
1	·3 2·	○	1· ·4
2	·2 ·1	○	·3 ·4
3		○	1· ·2 ·3 4·
4	·1	○	2· 3· 4·
5	2· 1·	○	3· 4·
6	3· ·2	○	·1 4·
7	○ 4· ·3 1·	○	·2
8	○ 2· 4· ·3	○	·1
9	4· ·2 ·1	○	·3
10	4·	○	·2 1· ·3
11	4· ·1	○	2· 3·
12	○ 1· ·4 2·	○	3·
13	·4 3· ·2	○	·1
14	3· ·4 1·	○	·2
15	·3 ·4	○	2· ·1
16	·2 1·	○	·3 ·4
17		○	·2 1· ·3 ·4
18	·1	○	2· 3· ·4
19	2·	○	1· 3· ·4
20	3· ·2	○	·4 ·1 ●
21	3· 1·	○	·2 4·
22	·3	○	2· ·1 4·
23	2· 1·	○	4· ·3 ●
24	4·	○	1· ·3 ·2 ●
25	4· ·1	○	2· 3·
26	4· 2·	○	1· 3·
27	4· ·2 3· ·1	○	
28	·4 3· 1·	○	·2
29	·4 ·3	○	·12·
30	·4 2· 1· ·3	○	
31	·4 ·2	○	·1 ·3

WASHINGTON MEAN TIME.

SEPTEMBER.

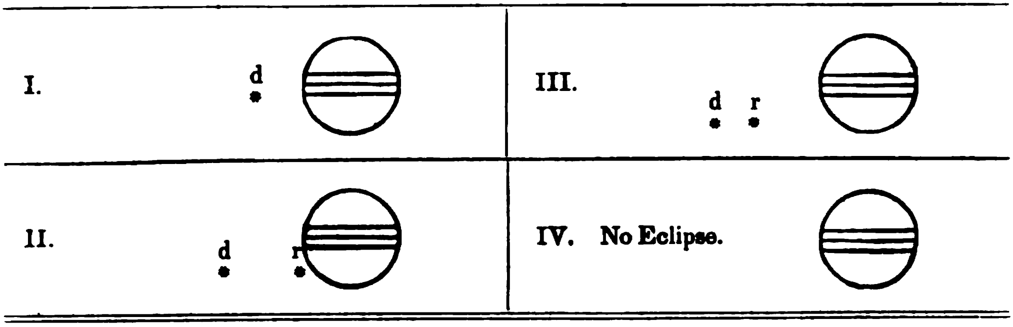
d	h	m	s				d	h	m	s				d	h	m	s			
1	0	36		I.	Sh.	Eg.	11	3	0	56.2	II.	Ec.	Dis.	20	23	58	36.4	III.	Ec.	Dis.
	1	57		I.	Tr.	Eg.		5	14	55.8	II.	Ec.	Re.	21	1	27	21.6	III.	Ec.	Re.
	19	34	10.3	I.	Ec.	Dis.		5	37		II.	Oc.	Dis.		4	58		III.	Oc.	Dis.
	23	5		I.	Oc.	Re.		7	53		II.	Oc.	Re.		6	15		III.	Oc.	Re.
2	5	14		II.	Sh.	In.		13	14		I.*	Sh.	In.		6	47	27.6	I.	Ec.	Dis.
	7	35		II.	Sh.	Eg.		14	33		I.*	Tr.	In.		10	9		I.*	Oc.	Re.
	7	59		II.	Tr.	In.		15	27		I.*	Sh.	Eg.		18	53	57.4	II.	Ec.	Dis.
	10	15		II.*	Tr.	Eg.		16	44		I.*	Tr.	Eg.		21	7	52.0	II.	Ec.	Re.
	16	52		I.*	Sh.	In.	12	10	24	59.8	I.*	Ec.	Dis.		21	17		II.	Oc.	Dis.
	18	14		I.	Tr.	In.		13	52		I.*	Oc.	Re.		23	32		II.	Oc.	Re.
	19	4		I.	Sh.	Eg.		21	7		II.	Sh.	In.	22	4	5		I.	Sh.	In.
	20	25		I.	Tr.	Eg.		23	28		II.	Sh.	Eg.		5	18		I.	Tr.	In.
3	2	5		III.	Sh.	In.		23	44		II.	Tr.	In.		6	17		I.	Sh.	Eg.
	3	49		III.	Sh.	Eg.	13	1	59		II.	Tr.	Eg.		7	29		I.	Tr.	Eg.
	7	44		III.	Tr.	In.		7	43		I.	Sh.	In.	23	1	15	54.7	I.	Ec.	Dis.
	9	5		III.	Tr.	Eg.		9	1		I.	Tr.	In.		4	36		I.	Oc.	Re.
	14	2	40.7	I.*	Ec.	Dis.		9	55		I.*	Sh.	Eg.		13	1		II.*	Sh.	In.
	17	33		I.	Oc.	Re.		11	12		I.*	Tr.	Eg.		15	22		II.*	Sh.	Eg.
4	0	25	19.7	II.	Ec.	Dis.		19	58	24.7	III.	Ec.	Dis.		15	24		II.*	Tr.	In.
	2	39	23.9	II.	Ec.	Re.		21	26	54.3	III.	Ec.	Re.		17	39		II.	Tr.	Eg.
	3	7		II.	Oc.	Dis.	14	1	14		III.	Oc.	Dis.		22	34		I.	Sh.	In.
	5	23		II.	Oc.	Re.		2	33		III.	Oc.	Re.		23	45		I.	Tr.	In.
	11	21		I.*	Sh.	In.		4	53	30.0	I.	Ec.	Dis.	24	0	46		I.	Sh.	Eg.
	12	42		I.*	Tr.	In.		8	20		I.	Oc.	Re.		1	56		I.	Tr.	Eg.
	13	33		I.*	Sh.	Eg,		16	18	31.1	II.*	Ec.	Dis.		14	5		III.*	Sh.	In.
	14	53		I.*	Tr.	Eg.		18	32	28.9	II.	Ec.	Re.		15	49		III.*	Sh.	Eg.
5	8	31	6.9	I.	Ec.	Dis.		18	51		II.	Oc.	Dis.		19	1		III.	Tr.	In.
	12	1		I.*	Oc.	Re.		21	6		II.	Oc.	Re.		19	44	28.7	I.	Ec.	Dis.
	18	32		II.	Sh.	In.	15	2	12		I.	Sh.	In.		20	17		III.	Tr.	Eg.
	20	52		II.	Sh.	Eg.		3	28		I.	Tr.	In.		23	4		I.	Oc.	Re.
	21	15		II.	Tr.	In.		4	24		I.	Sh.	Eg.	25	8	11	44.9	II.	Ec.	Dis.
	23	31		II.	Tr.	Eg.		5	40		I.	Tr.	Eg.		10	25	38.3	II.*	Ec.	Re.
6	5	49		I.	Sh.	In.		23	21	56.1	I.	Ec.	Dis.		10	30		II.*	Oc.	Dis.
	7	10		I.	Tr.	In.	16	2	47		I.	Oc.	Re.		12	45		II.*	Oc.	Re.
	8	1		I.	Sh.	Eg.		10	25		II.*	Sh.	In.		17	3		I.*	Sh.	In.
	9	21		I.	Tr.	Eg.		12	46		II.*	Sh.	Eg.		18	12		I.	Tr.	In.
	15	57	46.1	III.*	Ec.	Dis.		12	58		II.*	Tr.	In.		19	15		I.	Sh.	Eg.
	17	26	3.1	III.	Ec.	Re.		15	13		II.*	Tr.	Eg.		20	23		I.	Tr.	Eg.
	21	25		III.	Oc.	Dis.		20	40		I.	Sh.	In.	26	14	12	57.2	I.*	Ec.	Dis.
	22	46		III.	Oc.	Re.		21	56		I.	Tr.	In.		17	31		I.	Oc.	Re.
7	2	59	36.0	I.	Ec.	Dis.		22	52		I.	Sh.	Eg.	27	2	19		II.	Sh.	In.
	6	29		I.	Oc.	Re.		24	7		I.	Tr.	Eg.		4	36		II.	Tr.	In.
	13	42	57.0	II.*	Ec.	Dis.	17	10	5		III.*	Sh.	In.		4	40		II.	Sh.	Eg.
	15	56	58.8	II.*	Ec.	Re.		11	49		III.*	Sh.	Eg.		6	51		II.	Tr.	Eg.
	16	22		II.*	Oc.	Dis.		15	20		III.*	Tr.	In.		11	31		I.*	Sh.	In.
	18	38		II.	Oc.	Re.		16	38		III.*	Tr.	Eg.		12	39		I.*	Tr.	In.
8	0	17		I.	Sh.	In.		17	50	28.8	I.	Ec.	Dis.		13	43		I.*	Sh.	Eg.
	1	37		I.	Tr.	In.		21	14		I.	Oc.	Re.		14	50		I.*	Tr.	Eg.
	2	30		I.	Sh.	Eg.	18	5	36	24.2	II.	Ec.	Dis.	28	3	59	4.6	III.	Ec.	Dis.
	3	49		I.	Tr.	Eg.		7	50	20.2	II.	Ec.	Re.		5	28	7.2	III.	Ec.	Re.
	21	28	1.6	I.	Ec.	Dis.		8	5		II.	Oc.	Dis.		8	37		III.	Oc.	Dis.
9	0	56		I.	Oc.	Re.		10	20		II.*	Oc.	Re.		8	41	30.4	I.	Ec.	Dis.
	7	50		II.	Sh.	In.		15	9		I.*	Sh.	In.		9	52		III.*	Oc.	Re.
	10	10		II.*	Sh.	Eg.		16	23		I.*	Tr.	In.		11	58		I.*	Oc.	Re.
	10	29		II.*	Tr.	In.		17	21		I.	Sh.	Eg.		21	29	16.3	II.	Ec.	Dis.
	12	45		II.*	Tr.	Eg.		18	34		I.	Tr.	Eg.	29	1	56		II.	Oc.	Re.
	18	46		I.	Sh.	In.	19	12	18	56.3	I.*	Ec.	Dis.		5	59		I.	Sh.	In.
	20	5		I.	Tr.	In.		15	42		I.*	Oc.	Re.		7	6		I.	Tr.	In.
	20	58		I.	Sh.	Eg.		23	43		II.	Sh.	In.		8	12		I.	Sh.	Eg.
	22	16		I.	Tr.	Eg.	20	2	4		II.	Sh.	Eg.		9	17		I.	Tr.	Eg.
10	6	5		III.	Sh.	In.		2	12		II.	Tr.	In.	30	3	9	58.6	I.	Ec.	Dis.
	7	49		III.	Sh.	Eg.		4	27		II.	Tr.	Eg.		6	25		I.	Oc.	Re.
	11	34		III.*	Tr.	In.		9	37		I.*	Sh.	In.		15	37		II.*	Sh.	In.
	12	54		III.*	Tr.	Eg.		10	50		I.*	Tr.	In.		17	48		II.	Tr.	In.
	15	56	33.1	I.*	Ec.	Dis.		11	49		I.*	Sh.	Eg.		17	58		II.	Sh.	Eg.
	19	24		I.	Oc.	Re.		13	1		I.*	Tr.	Eg.		20	3		II.	Tr.	Eg.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

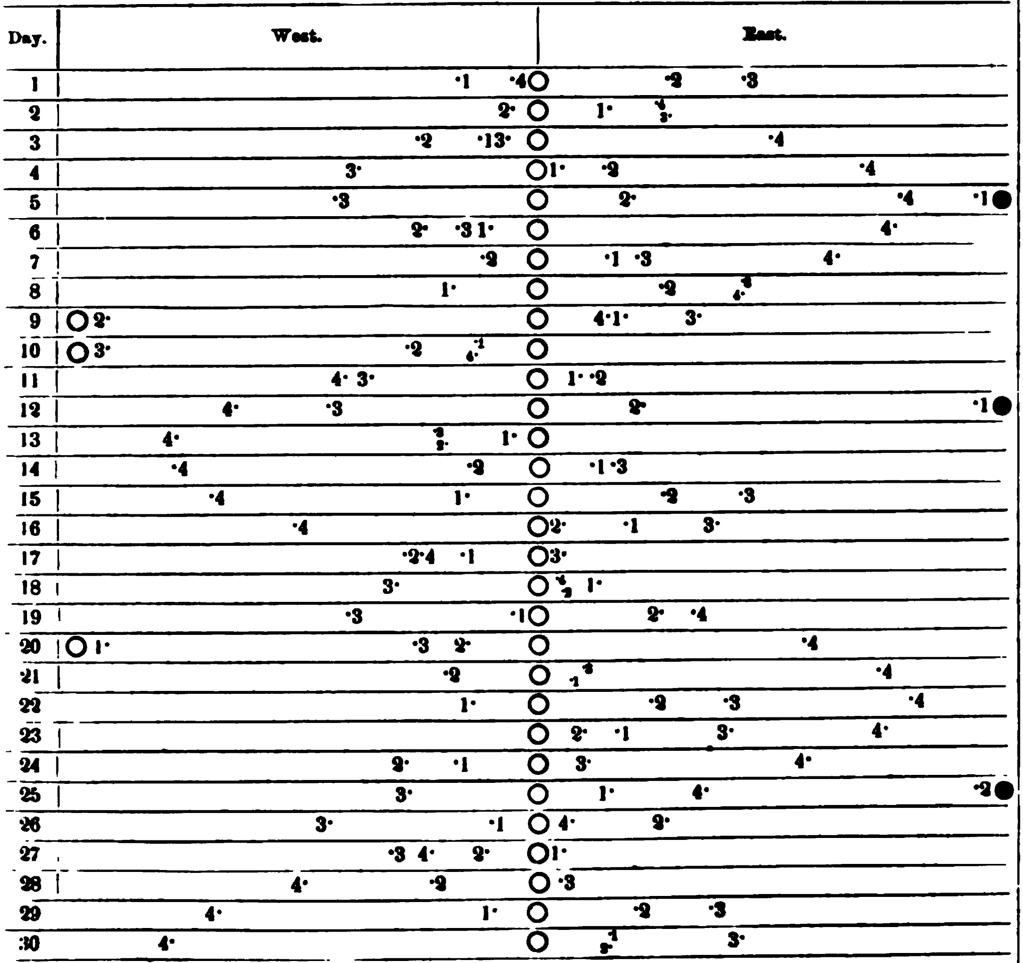
WASHINGTON MEAN TIME.

SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 12h for an Inverting Telescope.



WASHINGTON MEAN TIME.

OCTOBER.

d	h	m	s			
1	0	28		I.	Sh.	In.
	1	33		I.	Tr.	In.
	2	40		I.	Sh.	Eg.
	3	44		I.	Tr.	Eg.
	18	5		III.	Sh.	In.
	19	49		III.	Sh.	Eg.
	21	38	34.1	I.	Ec.	Dis.
	22	38		III.	Tr.	In.
	23	52		III.	Tr.	Eg.
2	0	52		I.	Oc.	Re.
	10	46	59.0	II.*	Ec.	Dis.
	15	7		II.*	Oc.	Re.
	18	56		I.	Sh.	In.
	19	59		I.	Tr.	In.
	21	8		I.	Sh.	Eg.
	22	11		I.	Tr.	Eg.
3	16	7	4.4	I.	Ec.	Dis.
	19	18		I.	Oc.	Re.
4	4	55		II.	Sh.	In.
	7	1		II.	Tr.	In.
	7	16		II.	Sh.	Eg.
	9	15		II.*	Tr.	Eg.
	13	25		I.*	Sh.	In.
	14	26		I.*	Tr.	In.
	15	37		I.*	Sh.	Eg.
	16	37		I.*	Tr.	Eg.
5	7	59	3.4	III.	Ec.	Dis.
	9	28	26.6	III.*	Ec.	Re.
	10	35	39.1	I.*	Ec.	Dis.
	12	11		III.*	Oc.	Dis.
	13	24		III.*	Oc.	Re.
	13	45		I.*	Oc.	Re.
6	0	4	29.6	II.	Ec.	Dis.
	4	18		II.	Oc.	Re.
	7	53		I.	Sh.	In.
	8	53		I.*	Tr.	In.
	10	6		I.*	Sh.	Eg.
	11	4		I.*	Tr.	Eg.
7	5	4	8.7	I.	Ec.	Dis.
	8	12		I.	Oc.	Re.
	18	14		II.	Sh.	In.
	20	11		II.	Tr.	In.
	20	34		II.	Sh.	Eg.
	22	25		II.	Tr.	Eg.
8	2	22		I.	Sh.	In.
	3	20		I.	Tr.	In.
	4	34		I.	Sh.	Eg.
	5	31		I.	Tr.	Eg.
	22	5		III.	Sh.	In.
	23	32	45.8	I.	Ec.	Dis.
	23	50		III.	Sh.	Eg.
9	2	10		III.	Tr.	In.
	2	39		I.	Oc.	Re.
	3	22		III.	Tr.	Eg.
	13	22	8.4	II.*	Ec.	Dis.
	17	28		II.*	Oc.	Re.
	20	50		I.	Sh.	In.
	21	46		I.	Tr.	In.
	23	3		I.	Sh.	Eg.
	23	57		I.	Tr.	Eg.
10	18	1	17.5	I.	Ec.	Dis.
	21	5		I.	Oc.	Re.
11	7	32		II.	Sh.	In.
	9	21		II.*	Tr.	In.
	9	52		II.*	Sh.	Eg.
11	11	36		II.*	Tr.	Eg.
	15	19		I.*	Sh.	In.
	16	13		I.*	Tr.	In.
	17	31		I.*	Sh.	Eg.
	18	24		I.	Tr.	Eg.
12	11	58	59.2	III.*	Ec.	Dis.
	12	29	54.0	I.*	Ec.	Dis.
	13	28	47.0	III.*	Ec.	Re.
	15	32		I.*	Oc.	Re.
	15	40		III.*	Oc.	Dis.
	16	52		III.*	Oc.	Re.
13	2	39	38.6	II.	Ec.	Dis.
	6	37		II.	Oc.	Re.
	9	47		I.*	Sh.	In.
	10	39		I.*	Tr.	In.
	12	0		I.*	Sh.	Eg.
	12	50		I.*	Tr.	Eg.
14	6	58	25.4	I.	Ec.	Dis.
	9	58		I.*	Oc.	Re.
	20	50		II.	Sh.	In.
	22	31		II.	Tr.	In.
	23	11		II.	Sh.	Eg.
15	0	46		II.	Tr.	Eg.
	4	16		I.	Sh.	In.
	5	5		I.	Tr.	In.
	6	28		I.	Sh.	Eg.
	7	16		I.	Tr.	Eg.
16	1	27	4.1	I.	Ec.	Dis.
	2	6		III.	Sh.	In.
	3	51		III.	Sh.	Eg.
	4	25		I.	Oc.	Re.
	5	37		III.	Tr.	In.
	6	48		III.	Tr.	Eg.
	15	57	13.9	II.*	Ec.	Dis.
	19	46		II.	Oc.	Re.
	22	45		I.	Sh.	In.
	23	32		I.	Tr.	In.
17	0	57		I.	Sh.	Eg.
	1	43		I.	Tr.	Eg.
	19	55	37.6	I.	Ec.	Dis.
	22	51		I.	Oc.	Re.
18	10	9		II.*	Sh.	In.
	11	41		II.*	Tr.	In.
	12	29		II.*	Sh.	Eg.
	13	56		II.*	Tr.	Eg.
	17	13		I.*	Sh.	In.
	17	58		I.	Tr.	In.
	19	25		I.	Sh.	Eg.
	20	9		I.	Tr.	Eg.
19	14	24	16.1	I.*	Ec.	Dis.
	15	59	9.8	III.*	Ec.	Dis.
	17	17		I.*	Oc.	Re.
	17	29	25.4	III.*	Ec.	Re.
	19	5		III.	Oc.	Dis.
	20	16		III.	Oc.	Re.
20	5	14	43.8	II.	Ec.	Dis.
	8	54		II.*	Oc.	Re.
	11	42		I.*	Sh.	In.
	12	25		I.*	Tr.	In.
	13	54		I.*	Sh.	Eg.
	14	36		I.*	Tr.	Eg.
21	8	52	49.1	I.*	Ec.	Dis.
	11	44		I.*	Oc.	Re.
	23	27		II.	Sh.	In.
22	0	50		II.	Tr.	In.
	1	48		II.	Sh.	Eg.
	3	4		II.	Tr.	Eg.
	6	10		I.	Sh.	In.
	6	51		I.	Tr.	In.
	8	22		I.*	Sh.	Eg.
	9	2		I.*	Tr.	Eg.
23	3	21	30.0	I.	Ec.	Dis.
	6	6		III.	Sh.	In.
	6	10		I.	Oc.	Re.
	7	52		III.*	Sh.	Eg.
	8	59		III.*	Tr.	In.
	10	12		III.*	Tr.	Eg.
	18	32	17.1	II.	Ec.	Dis.
	22	2		II.	Oc.	Re.
24	0	39		I.	Sh.	In.
	1	17		I.	Tr.	In.
	2	51		I.	Sh.	Eg.
	3	28		I.	Tr.	Eg.
	21	50	5.3	I.	Ec.	Dis.
25	0	36		I.	Oc.	Re.
	12	45		II.*	Sh.	In.
	13	58		II.*	Tr.	In.
	15	6		II.*	Sh.	Eg.
	16	13		II.*	Tr.	Eg.
	19	7		I.	Sh.	In.
	19	43		I.	Tr.	In.
	21	19		I.	Sh.	Eg.
	21	54		I.	Tr.	Eg.
26	16	18	45.8	I.*	Ec.	Dis.
	19	2		I.	Oc.	Re.
	19	59	31.8	III.	Ec.	Dis.
	21	30	18.2	III.	Ec.	Re.
	22	25		III.	Oc.	Dis.
	23	38		III.	Oc.	Re.
27	7	49	47.2	II.*	Ec.	Dis.
	11	10		II.*	Oc.	Re.
	13	36		I.*	Sh.	In.
	14	9		I.*	Tr.	In.
	15	48		I.*	Sh.	Eg.
	16	20		I.*	Tr.	Eg.
28	10	47	20.6	I.*	Ec.	Dis.
	13	28		I.*	Oc.	Re.
29	2	4		II.	Sh.	In.
	3	7		II.	Tr.	In.
	4	25		II.	Sh.	Eg.
	5	22		II.	Tr.	Eg.
	8	4		I.*	Sh.	In.
	8	35		I.*	Tr.	In.
	10	16		I.*	Sh.	Eg.
	10	46		I.*	Tr.	Eg.
30	5	16	3.5	I.	Ec.	Dis.
	7	54		I.*	Oc.	Re.
	10	6		III.*	Sh.	In.
	11	52		III.*	Sh.	Eg.
	12	18		III.*	Tr.	In.
	13	31		III.*	Tr.	Eg.
	21	7	18.7	II.	Ec.	Dis.
31	0	17		II.	Oc.	Re.
	2	33		I.	Sh.	In.
	3	1		I.	Tr.	In.
	4	45		I.	Sh.	Eg.
	5	12		I.	Tr.	Eg.
	23	44	40.8	I.	Ec.	Dis.

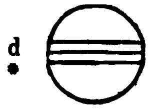
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; *Visible at Washington.

WASHINGTON MEAN TIME.

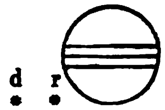
OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

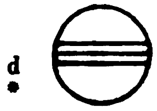
I.



III.



II.



IV. No Eclipse.

Configurations at 11h 30m for an Inverting Telescope.

Day.	West.		East.
1	·4 2· 1·	○	3·
2	·4 3· ·2	○	1·
3	3· ·4 ·1	○	2·
4	·3 ·4 2·	○	1·
5	·2 ·3	○	·4 ·1 ●
6	1·	○	·2 ·3 ·4
7		○	·1 2· 3· ·4
8	2· 1·	○	3· ·4
9	3· ·2	○	·1 4·
10	3· ·1	○	·2 4·
11	○ 2· ·3	○	1· 4·
12	·2 ·3 ·1	○	4·
13	○ 1· 4·	○	·2 ·3
14	4·	○	·1 2· 3·
15	4· 2· 1·	○	3·
16	4· ·2 3·	○	·1
17	4· 3· ·1	○	·2
18	·4 ·3	○	2· 1·
19	·4 ·2 ·3 ·1	○	
20	·4	○	1· ·2 ·3
21	·4	○	2· ·3 ·1 ●
22	2· 1·	○	·4 3·
23	·2 3·	○	·1 ·4
24	3· 1·	○	·2 ·4
25	·3	○	2· 1· ·4
26	2· ·3 ·1	○	4·
27		○	1· ·3 4· ·2 ●
28		○	2· 4· ·3 ·1 ●
29	2· 1·	○	4· 3·
30	○ 3· ·2 4·	○	·1
31	4· 3· 1·	○	·2

WASHINGTON MEAN TIME.

NOVEMBER.

d	h	m	s			
1	2	20		I.	Oc.	Re.
	15	23		II.	*Sh.	In.
	16	15		II.	*Tr.	In.
	17	43		II.	*Sh.	Eg.
	18	30		II.	Tr.	Eg.
	21	2		I.	Sh.	In.
	21	27		I.	Tr.	In.
	23	13		I.	Sh.	Eg.
	23	38		I.	Tr.	Eg.
2	18	13	23.6	I.	*Ec.	Dis.
	20	46		I.	Oc.	Re.
3	0	0	37.9	III.	Ec.	Dis.
	1	31	57.9	III.	Ec.	Re.
	1	43		III.	Oc.	Dis.
	2	58		III.	Oc.	Re.
	10	24	49.4	II.	*Ec.	Dis.
	13	24		II.	*Oc.	Re.
	15	30		I.	*Sh.	In.
	15	53		I.	*Tr.	In.
	17	42		I.	*Sh.	Eg.
	18	4		I.	*Tr.	Eg.
4	12	42	0.3	I.	*Ec.	Dis.
	15	12		I.	*Oc.	Re.
5	4	41		II.	Sh.	In.
	5	23		II.	Tr.	In.
	7	2		II.	*Sh.	Eg.
	7	38		II.	*Tr.	Eg.
	9	58		I.	*Sh.	In.
	10	19		I.	*Tr.	In.
	12	10		I.	*Sh.	Eg.
	12	30		I.	*Tr.	Eg.
6	7	10	46.3	I.	*Ec.	Dis.
	9	38		I.	*Oc.	Re.
	14	6		III.	*Sh.	In.
	15	33		III.	*Tr.	In.
	15	53		III.	*Sh.	Eg.
	16	48		III.	*Tr.	Eg.
	23	42	20.2	II.	Ec.	Dis.
7	2	31		II.	Oc.	Re.
	4	27		I.	Sh.	In.
	4	45		I.	Tr.	In.
	6	39		I.	*Sh.	Eg.
	6	56		I.	*Tr.	Eg.
8	1	39	24.6	I.	Ec.	Dis.
	4	4		I.	Oc.	Re.
	18	0		II.	*Sh.	In.
	18	30		II.	Tr.	In.
	20	21		II.	Sh.	Eg.
	20	46		II.	Tr.	Eg.
	22	56		I.	Sh.	In.
	23	10		I.	Tr.	In.
9	1	8		I.	Sh.	Eg.
	1	21		I.	Tr.	Eg.
	20	8	9.8	I.	Ec.	Dis.
	22	30		I.	Oc.	Re.
10	4	1	20.7	III.	Ec.	Dis.
	6	14		III.	*Oc.	Re.
	12	59	51.9	II.	*Ec.	Dis.
	15	37		II.	*Oc.	Re.
	17	24		I.	*Sh.	In.
10	17	36		I.	*Tr.	In.
	19	37		I.	Sh.	Eg.
	19	47		I.	Tr.	Eg.
11	14	36	48.6	I.	*Ec.	Dis.
	16	56		I.	*Oc.	Re.
12	7	19		II.	*Sh.	In.
	7	38		II.	*Tr.	In.
	9	39		II.	*Sh.	Eg.
	9	54		II.	*Tr.	Eg.
	11	53		I.	*Sh.	In.
	12	2		I.	*Tr.	In.
	14	5		I.	*Sh.	Eg.
	14	13		I.	*Tr.	Eg.
13	9	5	35.6	I.	*Ec.	Dis.
	11	22		I.	*Oc.	Re.
	18	6		III.	*Sh.	In.
	18	47		III.	Tr.	In.
	19	53		III.	Sh.	Eg.
	20	4		III.	Tr.	Eg.
14	2	17	22.9	II.	Ec.	Dis.
	4	43		II.	Oc.	Re.
	6	21		I.	*Sh.	In.
	6	27		I.	*Tr.	In.
	8	34		I.	*Sh.	Eg.
	8	38		I.	*Tr.	Eg.
15	3	34	17.5	I.	Ec.	Dis.
	5	48		I.	*Oc.	Re.
	20	37		II.	Sh.	In.
	20	46		II.	Tr.	In.
	22	58		II.	Sh.	Eg.
	23	1		II.	Tr.	Eg.
16	0	50		I.	Sh.	In.
	0	53		I.	Tr.	In.
	3	2		I.	Sh.	Eg.
	3	5		I.	Tr.	Eg.
	22	3		I.	Oc.	Dis.
17	0	14		I.	Oc.	Re.
	8	2	20.1	III.	*Ec.	Dis.
	9	34	57.5	III.	*Ec.	Re.
	15	34		II.	*Oc.	Dis.
	17	50		II.	*Oc.	Re.
	19	19		I.	Sh.	In.
	19	19		I.	Tr.	In.
	21	31		I.	Sh.	Eg.
	21	30		I.	Tr.	Eg.
18	16	29		I.	*Oc.	Dis.
	18	40		I.	Oc.	Re.
19	9	53		II.	*Tr.	In.
	9	56		II.	*Sh.	In.
	12	9		II.	*Tr.	Eg.
	12	17		II.	*Sh.	Eg.
	13	45		I.	*Tr.	In.
	13	47		I.	*Sh.	In.
	15	56		I.	*Tr.	Eg.
	16	0		I.	*Sh.	Eg.
20	10	55		I.	*Oc.	Dis.
	13	8	35.6	I.	*Ec.	Re.
	22	0		III.	Tr.	In.
	22	7		III.	Sh.	In.
	23	20		III.	Tr.	Eg.
20	23	54		III.	Sh.	Eg.
21	4	41		II.	Oc.	Dis.
	7	6	27.9	II.	*Ec.	Re.
	8	11		I.	*Tr.	In.
	8	16		I.	*Sh.	In.
	10	22		I.	*Tr.	Eg.
	10	28		I.	*Sh.	Eg.
22	5	20		I.	*Oc.	Dis.
	7	37	20.3	I.	*Ec.	Re.
	23	1		II.	Tr.	In.
	23	15		II.	Sh.	In.
23	1	17		II.	Tr.	Eg.
	1	36		II.	Sh.	Eg.
	2	37		I.	Tr.	In.
	2	44		I.	Sh.	In.
	4	48		I.	Tr.	Eg.
	4	57		I.	Sh.	Eg.
	23	47		I.	Oc.	Dis.
24	2	6	10.7	I.	Ec.	Re.
	11	26		III.	*Oc.	Dis.
	13	36	15.5	III.	*Ec.	Re.
	17	47		II.	Oc.	Dis.
	20	24	4.7	II.	Ec.	Re.
	21	2		I.	Tr.	In.
	21	13		I.	Sh.	In.
	23	14		I.	Tr.	Eg.
	23	25		I.	Sh.	Eg.
25	18	13		I.	Oc.	Dis.
	20	34	54.4	I.	Ec.	Re.
26	12	9		II.	*Tr.	In.
	12	34		II.	*Sh.	In.
	14	25		II.	*Tr.	Eg.
	14	55		II.	*Sh.	Eg.
	15	28		I.	*Tr.	In.
	15	42		I.	*Sh.	In.
	17	39		I.	Tr.	Eg.
	17	54		I.	Sh.	Eg.
27	12	39		I.	*Oc.	Dis.
	15	3	46.6	I.	*Ec.	Re.
28	1	14		III.	Tr.	In.
	2	8		III.	Sh.	In.
	2	38		III.	Tr.	Eg.
	3	56		III.	Sh.	Eg.
	6	53		II.	*Oc.	Dis.
	9	41	40.3	II.	*Ec.	Re.
	9	54		I.	*Tr.	In.
	10	10		I.	*Sh.	In.
	12	5		I.	*Tr.	Eg.
	12	23		I.	*Sh.	Eg.
29	7	5		I.	*Oc.	Dis.
	9	32	33.2	I.	*Ec.	Re.
30	1	17		II.	Tr.	In.
	1	53		II.	Sh.	In.
	3	34		II.	Tr.	Eg.
	4	14		II.	Sh.	Eg.
	4	20		I.	Tr.	In.
	4	39		I.	Sh.	In.
	6	31		I.	*Tr.	Eg.
	6	51		I.	*Sh.	Eg.

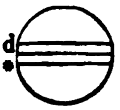
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

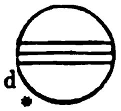
NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

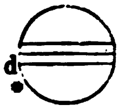
I.



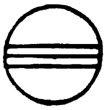
III.



II.



IV. No Eclipse.



Configurations at 11ʰ for an Inverting Telescope.

Day.	West.		East.
1	4· ·3	○	2· ·1
2	4· 2· ·3 ·1	○	
3	·4	○	1· ·3 ·2 ●
4	·4 ·1	○	2· ·3
5	○ 1· ·4 2·	○	3·
6	·2·4	○	2· ·1
7	3· 1·	○	·4 ·2
8	·3	○	·1 2· ·4
9	3 2· ·1	○	·4
10	·2	○	·31· ·4
11	·1	○	·2 ·3 4·
12	2·	○	1· 3· 4·
13	·2	○	3· 4· ·1 ●
14	3· 1·	○	·2 4·
15	3·	○	·12·
16	·3 4·2· 1·	○	
17	4· ·2	○	·3 1·
18	4· ·1	○	·2 ·3
19	○ 2· 4·	○	1· 3·
20	·4 ·2	○	3· ·1 ●
21	·4 3· 1·	○	·2
22	3· ·4	○	·1 2·
23	·3 2· 1· ·4	○	
24	·2	○	·4 ·1 ·3 ●
25	·1	○	·2 ·3 ·4
26		○	2· 1· 3· ·4
27	·2 ·1	○	3· ·4
28	○ 1· 3·	○	·2 4·
29	3·	○	·1 2· 4·
30	·3 2· 1·	○	4·

WASHINGTON MEAN TIME.

DECEMBER.

d	h	m	s			
1	1	31		I.	Oc.	Dis.
	4	1	25.8	I.	Ec.	Re.
	14	40		III. *	Oc.	Dis.
	17	37	36.6	III.	Ec.	Re.
	20	0		II.	Oc.	Dis.
	22	46		I.	Tr.	In.
	22	59	19.1	II.	Ec.	Re.
	23	8		I.	Sh.	In.
2	0	57		I.	Tr.	Eg.
	1	20		I.	Sh.	Eg.
	19	57		I.	Oc.	Dis.
	22	30	11.7	I.	Ec.	Re.
3	14	26		II. *	Tr.	In.
	15	12		II. *	Sh.	In.
	16	43		II. *	Tr.	Eg.
	17	12		I. *	Tr.	In.
	17	33		II.	Sh.	Eg.
	17	36		I.	Sh.	In.
	19	23		I.	Tr.	Eg.
	19	49		I.	Sh.	Eg.
4	14	23		I. *	Oc.	Dis.
	16	59	5.9	I. *	Ec.	Re.
5	4	29		III. *	Tr.	In.
	5	58		III. *	Tr.	Eg.
	6	9		III. *	Sh.	In.
	7	58		III. *	Sh.	Eg.
	9	7		II. *	Oc.	Dis.
	11	38		I. *	Tr.	In.
	12	5		I. *	Sh.	In.
	12	16	57.2	II. *	Ec.	Re.
	13	49		I. *	Tr.	Eg.
	14	17		I. *	Sh.	Eg.
6	8	49		I. *	Oc.	Dis.
	11	27	54.5	I. *	Ec.	Re.
7	3	34		II.	Tr.	In.
	4	31		II. *	Sh.	In.
	5	52		II. *	Tr.	Eg.
	6	4		I. *	Tr.	In.
	6	33		I. *	Sh.	In.
	6	52		II. *	Sh.	Eg.
	8	15		I. *	Tr.	Eg.
	8	46		I. *	Sh.	Eg.
8	3	15		I.	Oc.	Dis.
	5	56	49.1	I. *	Ec.	Re.
	17	56		III.	Oc.	Dis.
	19	26		III.	Oc.	Re.
	20	4	28.3	III.	Ec.	Dis.
	21	39	19.3	III.	Ec.	Re.
	22	14		II.	Oc.	Dis.
9	0	30		I.	Tr.	In.
	1	3		I.	Sh.	In.
	1	34	38.2	II.	Ec.	Re.
	2	42		I.	Tr.	Eg.
	3	15		I.	Sh.	Eg.
	21	42		I.	Oc.	Dis.
10	0	25	36.6	I.	Ec.	Re.
	16	43		II. *	Tr.	In.
	17	50		II.	Sh.	In.
	18	56		I.	Tr.	In.
	19	1		II.	Tr.	Eg.
	19	31		I.	Sh.	In.
	20	11		II.	Sh.	Eg.
	21	8		I.	Tr.	Eg.
	21	44		I.	Sh.	Eg.
11	16	8		I. *	Oc.	Dis.
	18	54	32.7	I.	Ec.	Re.
12	7	47		III. *	Tr.	In.
	9	20		III. *	Tr.	Eg.
	10	10		III. *	Sh.	In.
	11	22		II. *	Oc.	Dis.
	11	59		III. *	Sh.	Eg.
	13	23		I. *	Tr.	In.
	14	0		I. *	Sh.	In.
	14	52	19.3	II. *	Ec.	Re.
	15	34		I. *	Tr.	Eg.
	16	12		I. *	Sh.	Eg.
13	10	34		I. *	Oc.	Dis.
	13	23	23.0	I. *	Ec.	Re.
14	5	52		II. *	Tr.	In.
	7	10		II. *	Sh.	In.
	7	49		I. *	Tr.	In.
	8	10		II. *	Tr.	Eg.
	8	29		I. *	Sh.	In.
	9	31		II. *	Sh.	Eg.
	10	1		I. *	Tr.	Eg.
	10	41		I. *	Sh.	Eg.
15	5	1		I. *	Oc.	Dis.
	7	52	19.6	I. *	Ec.	Re.
	21	15		III.	Oc.	Dis.
	22	50		III.	Oc.	Re.
16	0	5	33.5	III.	Ec.	Dis.
	0	30		II.	Oc.	Dis.
	1	41	14.7	III.	Ec.	Re.
	2	15		I.	Tr.	In.
	2	57		I.	Sh.	In.
	4	10	2.4	II. *	Ec.	Re.
	4	27		I. *	Tr.	Eg.
	5	10		I. *	Sh.	Eg.
	23	27		I.	Oc.	Dis.
17	2	21	8.9	I.	Ec.	Re.
	19	3		II.	Tr.	In.
	20	29		II.	Sh.	In.
	20	42		I.	Tr.	In.
	21	22		II.	Tr.	Eg.
	21	26		I.	Sh.	In.
	22	50		II.	Sh.	Eg.
	22	53		I.	Tr.	Eg.
	23	38		I.	Sh.	Eg.
18	17	54		I.	Oc.	Dis.
	20	50	6.3	I.	Ec.	Re.
19	11	8		III. *	Tr.	In.
	12	45		III. *	Tr.	Eg.
	13	38		II. *	Oc.	Dis.
	14	10		III. *	Sh.	In.
	15	8		I. *	Tr.	In.
	15	55		I.	Sh.	In.
	16	0		III.	Sh.	Eg.
	17	20		I.	Tr.	Eg.
	17	27	46.2	II.	Ec.	Re.
	18	7		I.	Sh.	Eg.
20	12	21		I. *	Oc.	Dis.
	15	18	58.5	I. *	Ec.	Re.
21	8	13		II. *	Tr.	In.
	9	35		I. *	Tr.	In.
	9	48		II. *	Sh.	In.
	10	23		I. *	Sh.	In.
	10	33		II. *	Tr.	Eg.
	11	47		I. *	Tr.	Eg.
21	12	0		II. *	Sh.	Eg.
	12	36		I. *	Sh.	Eg.
22	6	48		I. *	Oc.	Dis.
	9	47	56.5	I. *	Ec.	Re.
23	0	39		III.	Oc.	Dis.
	2	19		III.	Oc.	Re.
	2	48		II. *	Oc.	Dis.
	4	2		I. *	Tr.	In.
	4	7	22.6	III. *	Ec.	Dis.
	4	52		I. *	Sh.	In.
	5	43	55.8	III. *	Ec.	Re.
	6	14		I. *	Tr.	Eg.
	6	45	31.9	II. *	Ec.	Re.
	7	5		I. *	Sh.	Eg.
24	1	14		I.	Oc.	Dis.
	4	16	47.1	I. *	Ec.	Re.
	21	24		II.	Tr.	In.
	22	28		I.	Tr.	In.
	23	7		II.	Sh.	In.
	23	21		I.	Sh.	In.
	23	44		II.	Tr.	Eg.
25	0	40		I.	Tr.	Eg.
	1	29		II.	Sh.	Eg.
	1	33		I.	Sh.	Eg.
	19	41		I.	Oc.	Dis.
	22	45	46.0	I.	Ec.	Re.
26	14	32		III. *	Tr.	In.
	15	57		II.	Oc.	Dis.
	16	15		III.	Tr.	Eg.
	16	55		I.	Tr.	In.
	17	50		I.	Sh.	In.
	18	11		III.	Sh.	In.
	19	7		I.	Tr.	Eg.
	20	2		III.	Sh.	Eg.
	20	2		I.	Sh.	Eg.
	20	3	18.8	II.	Ec.	Re.
27	14	8		I. *	Oc.	Dis.
	17	14	39.5	I.	Ec.	Re.
28	10	35		II. *	Tr.	In.
	11	22		I. *	Tr.	In.
	12	18		I. *	Sh.	In.
	12	27		II. *	Sh.	In.
	12	55		II. *	Tr.	Eg.
	13	34		I. *	Tr.	Eg.
	14	31		I. *	Sh.	Eg.
	14	48		II. *	Sh.	Eg.
29	8	35		I. *	Oc.	Dis.
	11	43	39.2	I. *	Ec.	Re.
30	4	7		III. *	Oc.	Dis.
	5	8		II. *	Oc.	Dis.
	5	49		I. *	Tr.	In.
	5	52		III. *	Oc.	Re.
	6	47		I. *	Sh.	In.
	8	1		I. *	Tr.	Eg.
	8	8	43.6	III. *	Ec.	Dis.
	9	0		I. *	Sh.	Eg.
	9	21	7.1	II. *	Ec.	Re.
	9	46	11.6	III. *	Ec.	Re.
31	3	3		I. *	Oc.	Dis.
	6	12	31.0	I. *	Ec.	Re.
	23	46		II.	Tr.	In.

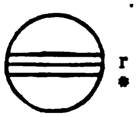
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

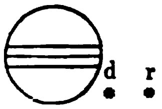
DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

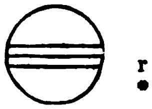
I.



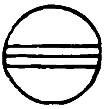
III.



II.

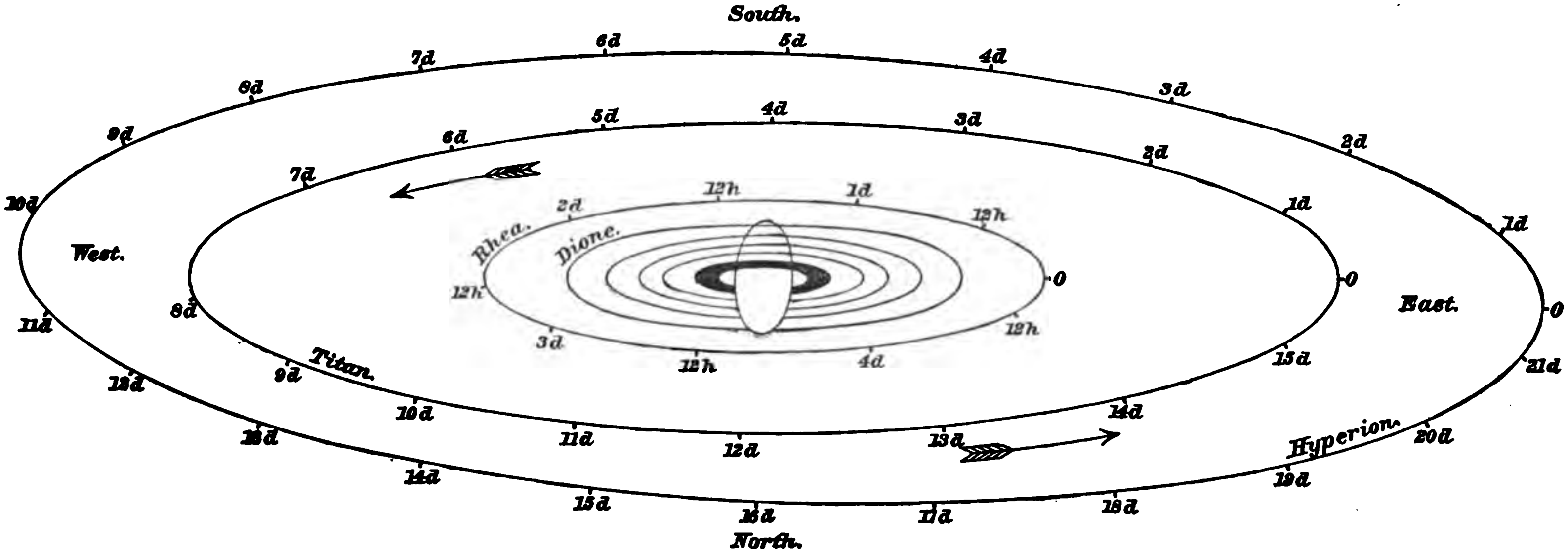


IV. No Eclipse.



Configurations at 10h 30m for an Inverting Telescope.

Day.	West.		East.
1	·2 ·3	○	·14·
2	·1 4·	○	·2 ·3
3	4·	○	2· 1· 3·
4	4· 2· ·1	○	3·
5	4· 3·	○	1· ·2 ●
6	·4 3·	○	2· ·1 ●
7	·4 ·3 2·1·	○	
8	·4 ·2 ·3	○	·1
9	·4 1·	○	·2·3
10		○	2·1· ·3 ·4 ●
11	2· ·1	○	3·4
12	3·2	○	1· ·4
13	3· ·1	○	2· ·4
14	·3 2·1·	○	·4
15	·2 ·3	○	·1 4·
16	1·	○	·2·3 4·
17		○	·1 2· 4· ·3
18	2· ·1	○	4· 3·
19	○3· 4· ·2	○	1·
20	4· 3· ·1	○	·2
21	○ 1· ○ 2· 4· ·3	○	
22	4· ·2·3	○	·1
23	·4 1·	○	3 ·2
24	·4	○	·12· ·3
25	·4 2· ·1	○	3·
26	·4 ·2	○	3· 1·
27	3· ·1	○	·4 ·2
28	○ 2· ·3	○	1· ·4
29	·3 ·2	○	·4 ·1 ●
30	1·	○	·3 ·2 ·4
31		○	·1 2· ·3 4·



APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN,

AT OPPOSITION IN 1893,

AS SEEN IN AN INVERTING TELESCOPE.

(THE VERTICAL SCALE IS TWICE THE HORIZONTAL ONE.)

Names of the Satellites.		Mean Synodic Periods.		
			d	h
I.	Mimas.	I.	0	22.6
II.	Enceladus.	II.	1	8.9
III.	Tethys.	III.	1	21.3
IV.	Dione.	IV.	2	17.7
V.	Rhea.	V.	4	12.5
VI.	Titan.	VI.	15	23.3
VII.	Hyperion.	VII.	21	7.8
VIII.	Iapetus.	VIII.	79	22.0

WASHINGTON MEAN TIME OF GREATEST ELONGATION, ETC.

In the diagram on the preceding page, the points of the orbits marked "o" are those of the eastern elongation, as seen in an inverting telescope. The apparent positions of a satellite at any time may be marked on the diagram by counting around the orbit the interval in days and hours which has elapsed since the last east elongation. The times of these elongations may be found from the following tables. Mimas can be seen only within a few hours of each elongation: the time of every elongation visible at Washington is therefore given. The times of other elongations of any satellite in the same direction may be found by adding or subtracting any multiple of the period. For the three outer satellites the times of elongation and conjunction are given. The following abbreviations are used:—

E., East Elongation,
I., Inferior Conjunction (south of planet),
W., West Elongation,
S., Superior Conjunction (north of planet).

MIMAS.

Greatest Elongations Visible at Washington.

	d	h			d	h			d	h			d	h			d	h			d	h	
Jan.	1	13.4	E.	Feb.	8	17.3	W.	Mar.	10	9.6	E.	Apr.	10	11.8	E.	May	14	10.0	E.	July	2	10.7	E.
	5	19.2	W.		9	15.9	W.		14	15.3	W.		11	10.4	E.		15	8.6	E.		3	9.3	E.
	6	17.8	W.		10	14.5	W.		15	13.9	W.		12	9.0	E.		16	7.2	E.		4	8.0	E.
	7	16.4	W.		11	13.1	W.		16	12.5	W.		13	7.7	E.		21	11.6	W.		10	11.1	W.
	8	15.0	W.		12	11.7	W.		17	11.1	W.		17	13.4	W.		22	10.3	W.		11	9.8	W.
	9	13.6	W.		17	16.1	E.		18	9.8	W.		18	12.0	W.		23	8.9	W.		12	8.4	W.
	14	18.0	E.		18	14.7	E.		22	15.5	E.		19	10.6	W.		24	7.6	W.	Nov.	29	18.9	W.
	15	16.6	E.		19	13.3	E.		23	14.1	E.		27	9.2	W.		29	12.1	E.		30	17.6	W.
	16	15.2	E.		20	11.9	E.		24	12.7	E.		21	7.8	W.		30	10.7	E.	Dec.	8	17.8	E.
	17	13.8	E.		21	10.5	E.		25	11.3	E.		25	13.7	E.		31	9.3	E.		9	16.4	E.
	18	12.4	E.		25	16.2	W.		26	9.9	E.		26	12.3	E.	June	1	7.9	E.		15	19.5	W.
	22	18.1	W.		26	14.8	W.		27	8.6	E.		27	11.0	E.		6	12.5	W.		16	18.1	W.
	23	16.7	W.		27	13.4	W.		30	15.7	W.		28	9.6	E.		7	11.1	W.		17	16.7	W.
	24	15.4	W.		28	12.1	W.		31	14.3	W.		29	8.2	E.		8	9.6	W.		18	15.3	W.
	25	14.0	W.	Mar.	1	10.7	W.	Apr.	1	12.9	W.	May	3	13.9	W.		15	11.3	E.		23	19.7	E.
	30	18.3	E.		5	16.5	E.		2	11.5	W.		4	12.6	W.		16	9.9	E.		24	18.4	E.
	31	16.9	E.		6	15.1	E.		3	10.1	W.		5	11.2	W.		17	8.5	E.		25	17.0	E.
Feb.	1	15.5	E.		7	13.7	E.		4	8.8	W.		6	9.8	W.		23	11.7	W.		26	15.6	E.
	2	14.1	E.		8	12.4	E.		8	14.5	E.		12	12.7	E.		24	10.3	W.		31	20.0	W.
	3	12.8	E.		9	11.0	E.		9	13.2	E.		13	11.4	E.		25	8.9	W.	Jan.	1	18.6	W.

ENCELADUS.

	d	h			d	h			d	h			d	h			d	h			d	h	
Jan.	2	2.4	E.	Jan.	15	19.3	E.	Jan.	29	12.2	E.	Feb.	12	5.0	E.	Feb.	25	21.8	E.	Mar.	11	14.5	E.
	3	11.3	E.		17	4.2	E.		30	21.1	E.		13	13.9	E.		27	6.7	E.		12	23.4	E.
	4	20.2	E.		18	13.1	E.	Feb.	1	6.0	E.		14	22.8	E.		28	15.5	E.		14	8.3	E.
	6	5.1	E.		19	22.0	E.		2	14.8	E.		16	7.6	E.	Mar.	2	0.4	E.		15	17.2	E.
	7	14.0	E.		21	6.9	E.		3	23.7	E.		17	16.5	E.		3	9.3	E.		17	2.1	E.
	8	22.9	E.		22	15.8	E.		5	8.6	E.		19	1.4	E.		4	18.2	E.		18	10.9	E.
	10	7.8	E.		24	0.7	E.		6	17.5	E.		20	10.3	E.		6	3.0	E.		19	19.8	E.
	11	16.6	E.		25	9.6	E.		8	2.4	E.		21	19.1	E.		7	11.9	E.		21	4.7	E.
	13	1.5	E.		26	18.5	E.		9	11.2	E.		23	4.0	E.		8	20.8	E.		22	13.6	E.
	14	10.4	E.		28	3.3	E.		10	20.1	E.		24	12.9	E.		10	5.7	E.		23	22.5	E.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ENCELADUS—(*Concluded.*)

d h	d h	d h	d h	d h	d h
Mar. 25 7.3 E.	Apr. 12 2.8 E.	Apr. 29 22.3 E.	May 17 17.8 E.	June 4 13.3 E.	Dec. 14 19.5 E.
26 16.2 E.	13 11.7 E.	May 1 7.2 E.	19 2.7 E.	5 22.1 E.	16 4.4 E.
28 1.1 E.	14 20.6 E.	2 16.1 E.	20 11.5 E.	7 7.0 E.	17 13.3 E.
29 10.0 E.	16 5.5 E.	4 0.9 E.	21 20.4 E.	8 15.9 E.	18 22.2 E.
30 18.9 E.	17 14.4 E.	5 9.8 E.	23 5.3 E.	10 0.8 E.	20 7.1 E.
Apr. 1 3.8 E.	18 23.2 E.	6 18.7 E.	24 14.2 E.	11 9.7 E.	21 16.0 E.
2 12.6 E.	20 8.1 E.	8 3.6 E.	25 23.1 E.	12 18.6 E.	23 0.8 E.
3 21.5 E.	21 17.0 E.	9 12.5 E.	27 8.0 E.	14 3.4 E.	24 9.7 E.
5 6.4 E.	23 1.9 E.	10 21.4 E.	28 16.8 E.	15 12.3 E.	25 18.6 E.
6 15.3 E.	24 10.8 E.	12 6.2 E.	30 1.7 E.	16 21.2 E.	27 3.5 E.
8 0.2 E.	25 19.7 E.	13 15.1 E.	31 10.6 E.	18 6.1 E.	28 12.4 E.
9 9.1 E.	27 4.5 E.	15 0.0 E.	June 1 19.5 E.	19 15.0 E.	29 21.3 E.
10 17.9 E.	28 13.4 E.	16 8.9 E.	3 4.4 E.	20 23.9 E.	31 6.2 E.

TETHYS.

d h	d h	d h	d h	d h	d h
Jan. 1 5.4 E.	Feb. 4 4.9 E.	Mar. 10 4.3 E.	Apr. 13 3.6 E.	May 17 2.9 E.	June 20 2.1 E.
3 2.7 E.	6 2.2 E.	12 1.6 E.	15 0.9 E.	19 0.2 E.	21 23.4 E.
5 0.0 E.	7 23.5 E.	13 22.9 E.	16 22.2 E.	20 21.5 E.	23 20.7 E.
6 21.4 E.	9 20.8 E.	15 20.1 E.	18 19.5 E.	22 18.7 E.	25 18.0 E.
8 18.7 E.	11 18.1 E.	17 17.4 E.	20 16.8 E.	24 16.0 E.	27 15.3 E.
10 16.0 E.	13 15.4 E.	19 14.7 E.	22 14.1 E.	26 13.3 E.	29 12.6 E.
12 13.3 E.	15 12.7 E.	21 12.0 E.	24 11.4 E.	28 10.6 E.	July 1 9.8 E.
14 10.6 E.	17 10.0 E.	23 9.3 E.	26 8.7 E.	30 7.9 E.	Dec. 12 18.2 E.
16 7.9 E.	19 7.3 E.	25 6.6 E.	28 5.9 E.	June 1 5.2 E.	14 15.5 E.
18 5.2 E.	21 4.6 E.	27 3.9 E.	30 3.2 E.	3 2.5 E.	16 12.8 E.
20 2.5 E.	23 1.9 E.	29 1.2 E.	May 2 0.5 E.	4 23.8 E.	18 10.2 E.
21 23.8 E.	24 23.2 E.	30 22.5 E.	3 21.8 E.	6 21.1 E.	20 7.5 E.
23 21.1 E.	26 20.5 E.	Apr. 1 19.8 E.	5 19.1 E.	8 18.4 E.	22 4.8 E.
25 18.4 E.	28 17.8 E.	3 17.1 E.	7 16.4 E.	10 15.7 E.	24 2.1 E.
27 15.7 E.	Mar. 2 15.1 E.	5 14.4 E.	9 13.7 E.	12 13.0 E.	25 23.4 E.
29 13.0 E.	4 12.4 E.	7 11.7 E.	11 11.0 E.	14 10.2 E.	27 20.7 E.
31 10.3 E.	6 9.7 E.	9 9.0 E.	13 8.3 E.	16 7.5 E.	29 18.0 E.
Feb. 2 7.6 E.	8 7.0 E.	11 6.3 E.	15 5.6 E.	18 4.8 E.	31 15.3 E.

DIONE.

d h	d h	d h	d h	d h	d h
Jan. 2 23.3 E.	Feb. 4 19.7 E.	Mar. 9 16.1 E.	Apr. 11 11.3 E.	May 14 7.1 E.	June 16 3.4 E.
5 17.0 E.	7 13.4 E.	12 9.8 E.	14 5.0 E.	17 0.8 E.	18 21.1 E.
8 10.7 E.	10 7.1 E.	15 3.4 E.	16 22.6 E.	19 18.4 E.	21 14.8 E.
11 4.4 E.	13 0.8 E.	17 21.0 E.	19 16.2 E.	22 12.1 E.	24 8.5 E.
13 22.1 E.	15 18.5 E.	20 14.6 E.	22 9.8 E.	25 5.8 E.	27 2.2 E.
16 15.8 E.	18 12.2 E.	23 8.2 E.	25 3.5 E.	27 23.5 E.	Dec. 13 21.7 E.
19 9.5 E.	21 5.9 E.	26 1.7 E.	27 21.1 E.	30 17.2 E.	16 15.4 E.
22 3.2 E.	23 23.6 E.	28 19.3 E.	30 14.7 E.	June 2 10.9 E.	19 9.1 E.
24 20.9 E.	26 17.3 E.	31 12.9 E.	May 3 8.4 E.	5 4.6 E.	22 2.8 E.
27 14.6 E.	Mar. 1 11.0 E.	Apr. 3 6.5 E.	6 2.1 E.	7 22.3 E.	24 20.5 E.
30 8.3 E.	4 4.7 E.	6 0.0 E.	8 19.7 E.	10 16.0 E.	27 14.2 E.
Feb. 2 2.0 E.	6 22.4 E.	8 17.6 E.	11 13.4 E.	13 9.7 E.	30 7.9 E.

RHEA.		TITAN.		HYPERION.	
d h	d h	d h	d h	d h	d h
Jan. 1 4.0 E.	Apr. 10 12.6 E.	Jan. 1 3.7 S.	Mar. 29 11.0 I.	Jan. 3 12.6 S.	Apr. 30 11.8 I.
5 16.5 E.	15 0.9 E.	4 23.6 E.	Apr. 2 13.3 W.	8 6.4 E.	May 6 6.9 W.
10 5.1 E.	19 13.3 E.	8 21.7 I.	6 16.5 S.	14 9.9 I.	10 20.4 S.
14 17.6 E.	24 1.7 E.	12 23.9 W.	10 12.6 E.	20 5.8 W.	15 13.8 E.
19 6.1 E.	28 14.0 E.	17 2.9 S.	14 8.5 I.	24 19.2 S.	21 17.3 I.
23 18.5 E.	May 3 2.4 E.	20 22.7 E.	18 10.8 W.	29 13.2 E.	27 12.8 W.
28 7.0 E.	7 14.8 E.	24 19.5 I.	22 14.0 S.	Feb. 4 16.8 I.	June 1 2.4 S.
Feb. 1 19.3 E.	12 3.2 E.	28 21.7 W.	26 10.1 E.	10 11.7 W.	5 20.0 E.
6 7.7 E.	16 15.5 E.	Feb. 2 1.5 S.	30 6.1 I.	15 0.8 S.	11 23.5 I.
10 20.1 E.	21 3.9 E.	5 21.2 E.	May 4 8.6 W.	19 19.0 E.	17 19.6 W.
15 8.5 E.	25 16.3 E.	9 17.9 I.	8 11.9 S.	25 22.4 I.	22 8.9 S.
19 20.8 E.	30 4.6 E.	13 20.2 W.	12 7.7 E.	Mar. 3 17.0 W.	27 2.7 E.
24 9.2 E.	June 3 17.0 E.	17 23.6 S.	16 4.1 I.	8 6.0 S.	July 3 6.4 I.
28 21.6 E.	8 5.4 E.	21 19.6 E.	20 6.5 W.	13 0.3 E.	9 2.9 W.
Mar. 5 10.0 E.	12 17.8 E.	25 15.9 I.	24 10.0 S.	19 3.2 I.	13 16.0 S.
9 22.3 E.	Dec. 6 2.7 E.	Mar. 1 18.3 W.	28 6.3 E.	24 21.9 W.	Nov. 30 8.4 I.
14 10.6 E.	10 15.3 E.	5 21.4 S.	June 1 2.3 I.	29 10.8 S.	Dec. 5 19.4 W.
18 23.0 E.	15 3.8 E.	9 17.6 E.	Dec. 14 7.7 W.	Apr. 3 4.5 E.	10 5.6 S.
23 11.3 E.	19 16.3 E.	13 13.5 I.	18 9.7 S.	9 7.8 I.	15 9.3 E.
27 23.6 E.	24 4.8 E.	17 15.8 W.	22 5.2 E.	15 2.4 W.	21 18.1 I.
Apr. 1 12.0 E.	28 17.3 E.	21 18.8 S.	26 3.1 I.	19 15.4 S.	27 3.1 W.
6 0.3 E.	Jan. 2 5.9 E.	25 14.9 E.	30 7.0 W.	24 8.9 E.	31 13.4 S.

IAPETUS.

d h	d h	d h	d h	d h	d h
Jan. 4 8.8 I.	Mar. 5 21.6 E.	May 2 13.1 S.	June 30 2.6 W.	Aug. 30 1.2 I.	Nov. 19 5.7 I.
24 5.6 W.	24 3.4 I.	23 5.8 E.	July 20 22.8 S.	Sept. 19 15.4 W.	Dec. 9 19.1 W.
Feb. 13 8.4 S.	Apr. 12 13.8 W.	June 10 17.9 I.	Aug. 10 7.5 E.	Oct. 31 20.0 E.	30 5.4 S.

THE APPARENT ELEMENTS OF SATURN'S RINGS.

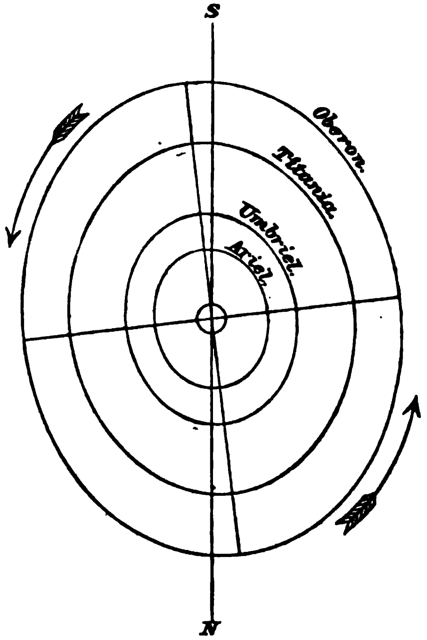
Greenwich Mean Noon.	*a* Outer Major Axis.	*b* Outer Minor Axis.	*p* Inclination of Northern Semi-Minor Axis to Circle of Declination from North to East.	*l* The Elevation of the Earth above the Plane of the Ring.	*l′* The Elevation of the Sun above the Plane of the Ring.	*u* Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on	*u′*
						Equator.	Ecliptic.
Jan. 0	39″.30	6″.19	− 2° 55′.4	+ 9° 3′.7	+ 6° 26′.9	245° 15′.5	202° 47′.8
20	40.69	6.46	− 2 52.8	+ 9 8.7	+ 6 44.5	245 39.0	203 11.4
Feb. 9	42.02	6.52	− 2 54.3	+ 8 55.3	+ 7 1.9	245 24.5	202 56.9
Mar. 1	43.06	6.31	− 3 0.0	+ 8 26.0	+ 7 19.3	244 32.7	202 5.2
21	43.62	5.90	− 3 8.2	+ 7 46.6	+ 7 36.6	243 17.3	200 49.9
Apr. 10	43.57	5.37	− 3 17.2	+ 7 5.2	+ 7 53.9	241 53.8	199 26.4
30	42.93	4.86	− 3 25.2	+ 6 30.4	+ 8 11.0	240 39.3	198 12.1
May 20	41.84	4.48	− 3 30.5	+ 6 9.2	+ 8 28.2	239 49.0	197 21.8
June 9	40.51	4.30	− 3 32.3	+ 6 5.6	+ 8 45.2	239 31.5	197 4.3
29	39.12	4.32	− 3 30.4	+ 6 20.3	+ 9 2.1	239 49.9	197 22.7
July 19	37.84	4.52	− 3 24.8	+ 6 51.5	+ 9 19.0	240 42.3	198 15.3
Aug. 8	36.76	4.87	− 3 16.1	+ 7 36.5	+ 9 35.8	242 4.5	199 37.5
28	35.94	5.33	− 3 4.7	+ 8 31.4	+ 9 52.5	243 50.5	201 23.5
Sept. 17	35.43	5.87	− 2 51.2	+ 9 32.2	+ 10 9.1	245 53.5	203 26.6
Oct. 7	35.24	6.47	− 2 36.5	+ 10 34.9	+ 10 25.6	248 6.2	205 39.3
27	35.39	7.11	− 2 21.3	+ 11 35.7	+ 10 42.1	250 21.0	207 54.3
Nov. 16	35.86	7.77	− 2 6.5	+ 12 30.6	+ 10 58.4	252 29.7	210 3.0
Dec. 6	36.65	8.41	− 1 53.3	+ 13 16.1	+ 11 14.7	254 23.2	211 56.6
26	37.73	9.01	− 1 42.8	+ 13 49.1	+ 11 30.9	255 52.7	213 26.1
31	38.03	9.15	− 1 40.8	+ 13 55.1	+ 11 34.9	256 10.3	213 43.7

The factor to be multiplied by *a* and *b* to obtain the axes of—

The inner ellipse of the outer ring = 0.8801 log factor = 9.9445
The outer ellipse of the inner ring = 0.8599 log factor = 9.9344
The inner ellipse of the inner ring = 0.6650 log factor = 9.8228
The inner ellipse of the dusky ring = 0.5486 log factor = 9.7392

NOTE.—The positive sign of *l* indicates that the visible surface of the ring is the northern one.

Date.	Position Angle.	App. Distances. Ariel.	App. Distances. Umbriel.
	° ′	″	″
Jan. 24,	5 19.8	14.1	19.7
Apr. 28,	6 13.6	15.0	21.0
Aug. 5,	7 8.1	14.2	19.7



Date.	Position Angle.	App. Distances. Titania.	App. Distances. Oberon.
	° ′	″	″
Jan. 24,	5 19.8	32.3	43.1
Apr. 28,	6 13.6	34.4	46.0
Aug. 5,	7 8.1	32.3	43.3

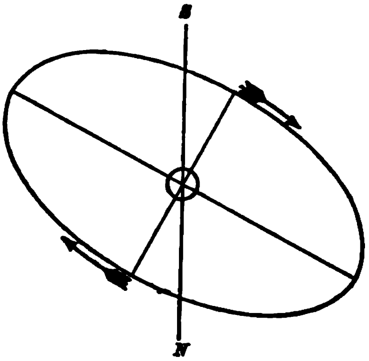
APPARENT ORBITS OF THE SATELLITES OF URANUS IN 1893,
AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ARIEL.						UMBRIEL.						TITANIA.						OBERON.			
North.			South.			North.			South.			North.			South.			North and South.			
	d	h		d	h		d	h		d	h		d	h		d	h		d	h	
Jan.	21	18.3	Jan.	25	13.0	Jan.	20	2.9	Jan.	22	4.6	Jan.	21	15.1	Jan.	17	6.6	Jan.	27	12.2	N.
	29	7.7	Feb.	2	2.5		28	9.8		30	11.5		30	8.1		25	23.6	Feb.	3	5.7	S.
Feb.	5	21.2		9	15.9	Feb.	5	16.7	Feb.	7	18.5	Feb.	8	1.1	Feb.	3	16.6		9	23.3	N.
	13	10.7		17	5.4		13	23.7		16	1.4		16	18.0		12	9.5		16	16.9	S.
	21	0.1		24	18.9		22	6.6		24	8.3		25	11.0		21	2.5		23	10.5	N.
	28	13.6	Mar.	4	8.3	Mar.	2	13.5	Mar.	4	15.2	Mar.	6	4.0	Mar.	1	19.5	Mar.	2	4.1	S.
Mar.	8	3.1		11	21.8		10	20.5		12	22.2		14	20.9		10	12.4		8	21.6	N.
	15	16.5		19	11.3		19	3.4		21	5.1		23	13.9		19	5.4		15	15.2	S.
	23	6.0		27	0.7		27	10.3		29	12.1	Apr.	1	6.9		27	22.3		22	8.8	N.
	30	19.4	Apr.	3	14.2	Apr.	4	17.3	Apr.	6	19.0		9	23.8	Apr.	5	15.3		29	2.4	S.
Apr.	7	8.9		11	3.7		13	0.2		15	1.9		18	16.8		14	8.3	Apr.	4	20.0	N.
	14	22.4		18	17.1		21	7.1		23	8.8		27	9.7		23	1.2		11	13.5	S.
	22	11.8		26	6.6		29	14.0	May	1	15.8	May	6	2.7	May	1	18.2		18	7.1	N.
	30	1.3	May	3	20.0	May	7	20.9		9	22.7		14	19.6		10	11.1		25	0.7	S.
May	7	14.8		11	9.5		16	3.8		18	5.6		23	12.6		19	4.1	May	1	18.4	N.
	15	4.2		18	23.0		24	10.7		26	12.6	June	1	5.6		27	21.1		8	12.0	S.
	22	17.7		26	12.4	June	1	17.7	June	3	19.5		9	22.5	June	5	14.0		15	5.6	N.
	30	7.3	June	3	1.9		10	0.6		12	2.4		18	15.5		14	7.0		21	23.2	S.
June	6	20.7		10	15.4		18	7.5		20	9.4		27	8.5		22	23.9		28	16.8	N.
	14	10.1		18	4.9		26	14.5		28	16.3	July	6	1.5	July	1	16.9	June	4	10.4	S.
	21	23.6		25	18.3	July	4	21.4	July	6	23.2		14	18.4		10	9.9		11	4.0	N.
	29	13.0	July	3	7.8		13	4.3		15	6.1		23	11.4		19	2.8		17	21.6	S.
July	7	2.5		10	21.3		21	11.3		23	13.0	Aug.	1	4.4		27	19.8		24	15.2	N.
	14	16.0		18	10.7		29	18.2		31	19.9		9	21.3	Aug.	5	12.8	July	1	8.8	S.
	22	5.5		26	0.2	Aug.	7	1.1	Aug.	9	2.8		18	14.3		14	5.7		8	2.4	N.

	d	h		d	h
Period of Ariel,	2	12.489	Period of Titania,	8	16.942
Period of Umbriel,	4	3.460	Period of Oberon,	13	11.119

NOTE.—For Ariel only every third elongation is given, and for Umbriel every alternate one. The intermediate ones may be found by adding multiples of the period of the satellite.



Date.	Position Angle.	Apparent Distance.
	°	″
Feb. 1,	243.7	16.6
Sept. 12,	248.7	16.4
Dec. 21,	246.8	16.9

APPARENT ORBIT OF THE SATELLITE OF NEPTUNE IN 1893,
AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

North East.			South West.			North East.			South West.			North East.			South West.		
	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	5	12.4	Jan.	2	13.8	Sept.	3	9.4	Aug.	31	10.8	Nov.	7	1.2	Nov.	4	2.7
	11	9.5		8	10.9		9	6.4	Sept.	6	7.8		12	22.2		9	23.8
	17	6.6		14	8.0		15	3.5		12	4.9		18	19.3		15	20.9
	23	3.7		20	5.1		21	0.6		18	2.0		24	16.4		21	18.0
	29	0.8		26	2.3		26	21.6		23	23.0		30	13.5		27	15.1
Feb.	3	21.9		31	23.4	Oct.	2	18.7		29	20.1	Dec.	6	10.7	Dec.	3	12.2
	9	19.0	Feb.	6	20.5		8	15.8	Oct.	5	17.2		12	7.7		9	9.3
	15	16.1		12	17.6		14	12.9		11	14.3		18	4.8		15	6.3
	21	13.2		18	14.6		20	10.0		17	11.4		24	1.9		21	3.4
	27	10.2		24	11.7		26	7.0		23	8.5		29	22.9		27	0.5
Mar.	5	7.2	Mar.	2	8.7	Nov.	1	4.1		29	5.6	Jan.	4	20.0	Jan.	1	21.6

The above times are those of each passage of the satellite through an apsis of its apparent orbit. The position of the satellite at any other time may be found by measuring around the orbit from the apsis last passed through, remembering that the radius vector of the satellite describes equal areas in equal times.

Period of the satellite of Neptune, $5^d\,21^h.045$.

NOTE.—In the above diagram the central circle represents the planet, and is on the same scale as the orbit.

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m			°	′
Jan.	1	21	13	□ ♄ ☉			
	5	15	7	□ ♃ ☉			
	8	4	9	♂ in ☊			
	8	15	15	☌ ♄ ☽	♄ +	0	35
	10	23	20	☌ ♅ ☽	♅ +	1	1
	13	11	10	☿ in ☋			
	15	1	55	☌ ♀ ☽	♀ +	4	47
	15	16	46	☌ ☿ ☽	☿ +	4	11
	21	14	40	♄ Stationary.			
	23	5	29	☌ ♂ ☽	♂ +	1	43
	23	7	35	☌ ♃ ☽	♃ +	0	6
	23	16	11	☿ in Aphelion.			
	25	10	51	☌ ♂ ♃	♂ +	1	36
	26	22	28	☌ ♆ ☽	♆ —	4	37
	29	9	46	♀ in ☋			
	29	12	49	□ ♅ ☉			
Feb.	5	0	8	☌ ♄ ☽	♄ +	1	2
	9	8	21	☌ ♅ ☽	♅ +	1	22
	12	18	23	♅ Stationary.			
	13	1	18	☿ Greatest Hel. Lat. S.			
	14	7	34	☌ ♀ ☽	♀ +	4	31
	15	20	55	☌ ☿ ☽	☿ +	2	44
	16	2	47	☌ ☿ ☉ Superior.			
	16	18	8	♆ Stationary.			
	19	21	40	☌ ♃ ☽	♃ —	0	29
	20	20	44	☌ ♂ ☽	♂ +	0	5
	23	3	57	☌ ♆ ☽	♆ —	4	50
	26	3	34	□ ♆ ☉			
Mar.	4	1	12	☿ in ☊			
	4	6	28	☌ ♄ ☽	♄ +	1	12
	4	22	4	♀ in Aphelion.			
	6	16	20	☌ ♅ ☽	♅ +	1	35
	8	15	33	☿ in Perihelion.			
	14	4	-	☿ Greatest elong. E.		18	27
	16	12	4	☌ ♀ ☽	♀ +	2	28
	18	14	33	☌ ☿ ☽	☿ +	4	39
	18	23	0	☿ Greatest Hel. Lat. N.			
	19	15	29	☌ ♃ ☽	♃ —	1	7
	19	16	0	☉ enters ♈, Spring com.			
	21	7	10	☿ Stationary.			
	21	11	42	☌ ♂ ☽	♂ —	1	31
	22	10	31	☌ ♆ ☽	♆ —	5	11
	27	6	24	♀ Greatest Hel. Lat. S.			
	29	5	4	☍ ♄ ☉			
	31	9	16	☌ ☿ ☉ Inferior.			
	31	10	16	☌ ♄ ☽	♄ +	1	5
Apr.	2	22	26	☌ ♅ ☽	♅ +	1	36
	11	10	20	☿ in ☋			
	12	18	40	☿ Stationary.			
Apr.	14	7	52	☌ ☿ ☽	☿ +	1	39
	15	14	36	☌ ♀ ☽	♀ —	0	42
	16	12	5	☌ ♃ ☽	♃ —	1	44
	16	-	-	☉ eclipsed, invis. at Wash.			
	18	19	13	☌ ♆ ☽	♆ —	5	4
	19	2	23	☌ ♂ ☽	♂ —	2	45
	21	15	14	☿ in Aphelion.			
	27	7	0	☌ ♃ ☉			
	27	12	22	☌ ♄ ☽	♄ +	0	50
	28	7	20	☍ ♅ ☉			
	28	9	-	☿ Greatest elong. W.		26	56
	28	11	31	☌ ♀ ♃	♀ +	0	3
	30	2	52	☌ ♅ ☽	♅ +	1	30
May	1	16	7	☌ ♀ ☉ Superior.			
	12	2	5	☿ Greatest Hel. Lat. S.			
	13	18	48	☌ ☿ ☽	☿ —	3	12
	14	9	44	☌ ♃ ☽	♃ —	2	20
	15	12	58	☌ ♀ ☽	♀ —	3	4
	16	6	42	☌ ♆ ☽	♆ —	5	5
	17	17	7	☌ ♂ ☽	♂ —	3	32
	20	1	58	☌ ☿ ♃	♃ +	0	56
	22	13	17	♀ in ☋			
	24	15	40	☌ ♄ ☽	♄ +	0	43
	25	1	27	☌ ♀ ♆	♀ +	1	36
	27	6	36	☌ ♅ ☽	♅ +	1	24
	31	0	44	☿ in ☊			
	31	20	18	☌ ♆ ☉			
June	2	23	15	☌ ☿ ♆	☿ +	2	1
	4	11	22	☌ ☿ ☉ Superior.			
	4	14	48	☿ in Perihelion.			
	8	19	11	♄ Stationary.			
	11	6	33	☌ ♃ ☽	♃ —	2	57
	12	19	1	☌ ♆ ☽	♆ —	5	7
	14	8	8	☌ ☿ ☽	☿ —	2	53
	14	8	13	☌ ♀ ☽	♀ —	3	52
	14	9	31	☌ ☿ ♀	☿ +	0	59
	14	22	13	☿ Greatest Hel. Lat. N.			
	15	7	49	☌ ♂ ☽	♂ —	3	54
	20	11	56	☉ enters ♋, Summer com.			
	20	22	8	☌ ♄ ☽	♄ +	0	48
	23	11	14	☌ ♅ ☽	♅ —	1	40
	25	12	53	♀ in Perihelion.			
	26	23	11	☌ ☿ ♂	☿ +	0	25
	27	2	54	□ ♄ ☉			
July	3	10	40	⊕ in Aphelion.			
	8	9	34	☿ in ☋			
	8	20	54	☌ ♀ ♂	♀ +	0	18
	9	0	46	☌ ♃ ☽	♃ —	3	35
	10	6	25	☌ ♆ ☽	♆ —	5	16

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m			°	′
July	10	20	–	☿	Greatest elong. E.	26	30
	12	9	43	♂	Greatest Hel. Lat. N.		
	13	23	11	☌ ♂ ☽	.... ♂ —	3	49
	14	4	34	☌ ♀ ☽	.... ♀ —	3	24
	14	10	43	⛢	Stationary.		
	14	14	7	☌ ☿ ☽	.... ☿ —	6	10
	17	1	13	♀	Greatest Hel. Lat. N.		
	18	8	28	☌ ♄ ☽	.... ♄ +	1	5
	18	14	30	☿	in Aphelion.		
	20	17	58	☌ ⛢ ☽	.... ⛢ —	1	12
	23	22	37	☿	Stationary.		
	28	23	41	□ ⛢ ☉			
Aug.	5	15	5	☌ ♃ ☽	.... ♃ —	4	10
	6	15	23	☌ ♆ ☽	.... ♆ —	5	31
	7	16	55	☌ ☿ ☉	Inferior.		
	8	0	18	☿	Greatest Hel. Lat. S.		
	10	13	57	☌ ☿ ☽	.... ☿ —	9	32
	11	15	23	☌ ♂ ☽	.... ♂ —	3	14
	13	5	52	☌ ♀ ☽	.... ♀ —	1	41
	14	21	51	☌ ♄ ☽	.... ♄ +	1	26
	16	10	52	♂	in Aphelion.		
	17	2	19	☿	Stationary.		
	17	3	3	☌ ⛢ ☽	.... ⛢ +	1	59
	22	10	45	□ ♃ ☉			
	25	9	–	☿	Greatest elong. W.	18	16
	26	23	43	☿	in ☊		
	31	14	4	☿	in Perihelion.		
Sept.	1	10	14	☌ ♀ ♄	.... ♀ —	1	56
	2	1	2	☌ ♃ ☽	.... ♃ —	3	56
	2	21	52	☌ ♆ ☽	.... ♆ —	5	45
	3	16	5	☌ ♂ ☉			
	5	5	21	□ ♆ ☉			
	8	17	50	☌ ☿ ☽	.... ☿ —	1	59
	9	8	42	☌ ♂ ☽	.... ♂ —	2	7
	10	21	27	☿	Greatest Hel. Lat. N.		
	11	2	34	♀	in ☋		
	11	12	39	☌ ♄ ☽	.... ♄ +	1	48
	12	12	11	☌ ♀ ☽	.... ♀ +	0	30
	13	13	47	☌ ⛢ ☽	.... ⛢ +	2	14
	15	15	19	♆	Stationary.		
	19	6	32	♃	Stationary.		
	19	15	8	☌ ☿ ☉	Superior.		
	22	2	47	☉	enters ♎, Autumn com.		
	23	20	10	☌ ♀ ⛢	.... ♀ —	1	11
	29	7	23	☌ ♃ ☽	.... ♃ —	4	47
	29	22	24	☌ ☿ ♄	.... ☿ —	1	53
	30	3	23	☌ ♆ ☽	.... ♆ —	5	53
Oct.	4	8	51	☿	in ☋		
	8	3	15	☌ ♂ ☽	.... ♂ —	0	34
Oct.	8	4	1	☌ ♄ ☉			
	9	3	16	☌ ♄ ☽	.... ♄ +	3	31
	9	–	–	☉	eclipsed, invis. at Wash.		
	10	9	50	☌ ☿ ☽	.... ☿ +	0	37
	11	0	55	☌ ⛢ ☽	.... ⛢ +	2	24
	12	9	31	☌ ♀ δ	Scorpii... ♀ +	0	13
	12	19	32	☌ ♀ ☽	.... ♀ +	1	49
	14	13	44	☿	in Aphelion.		
	15	22	37	☌ ☿ ⛢	.... ☿ —	1	49
	15	14	46	♀	in Aphelion.		
	26	12	4	☌ ♃ ☽	.... ♃ —	4	39
	27	10	4	☌ ♆ ☽	.... ♆ —	5	53
	31	4	40	☌ ♂ ♄	.... ♂ —	1	36
Nov.	2	12	36	☌ ⛢ ☉			
	3	23	2	☿	Greatest Hel. Lat. S.		
	5	5	9	☿	Greatest elong. E.	23	12
	5	16	34	☌ ♄ ☽	.... ♄ +	2	30
	5	22	49	☌ ♂ ☽	.... ♂ +	1	11
	6	23	8	♀	Greatest Hel. Lat. S.		
	7	11	27	☌ ⛢ ☽	.... ⛢ +	2	25
	9	21	3	☌ ☿ ☽	.... ☿ +	1	27
	12	0	1	☌ ♀ ☽	.... ♀ +	1	11
	15	16	24	☿	Stationary.		
	17	17	51	☍ ♃ ☉			
	22	17	15	☌ ♃ ☽	.... ♃ —	4	22
	22	22	58	☿	in ☊		
	23	19	3	☌ ♆ ☽	.... ♆ —	5	48
	25	18	7	☌ ☿ ☉	Inferior.		
	27	13	19	☿	in Perihelion.		
Dec.	3	4	12	☌ ♄ ☽	.... ♄ +	2	58
	3	7	22	☍ ♆ ☉			
	4	19	7	☌ ♂ ☽	.... ♂ +	2	48
	5	7	32	☿	Stationary.		
	5	20	59	☌ ⛢ ☽	.... ⛢ +	2	44
	6	1	30	☌ ☿ ☽	.... ☿ +	6	9
	6	4	28	♀	Greatest elong. E.	47	29
	6	5	1	☌ ♂ ⛢	.... ♂ +	0	8
	6	23	20	☌ ♂ α²	Libræ.... ♂ +	0	11
	7	20	46	☿	Greatest Hel. Lat. N.		
	11	21	4	☌ ♀ ☽	.... ♀ +	2	36
	14	1	1	☿	Greatest elong. W.	21	23
	15	18	24	☌ ⛢ α²	Libræ.... ⛢ +	0	3
	19	23	23	☌ ♃ ☽	.... ♃ —	4	9
	21	5	25	☌ ♆ ☽	.... ♆ —	5	46
	20	20	45	☉	enters ♑, Winter com.		
	30	10	20	⊕	in Perihelion.		
	30	14	33	☌ ♄ ☽	.... ♄ +	3	32
	31	8	7	☿	in ☋		

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Åbo . . .	+ 60 26 56.8	− 9 53.5	9.998902	− 6 37 18.45	− 1 29 6.41
Adelaide. . .	− 34 55 33.8	+ 10 47.6	9.999527	−14 22 32.34	− 9 14 20.30
Albany . . .	+ 42 39 49.5	− 11 28.2	9.999336	− 0 13 12.87	+ 4 54 59.17
Alfred (N. Y.) . .	+ 42 15 19.8	− 11 27.2	9.999346	+ 0 2 55.00	+ 5 11 7.04
Algier . . .	+ 36 45 2.7	− 11 1.6	9.999483	− 5 20 23.43	− 0 12 11.39
Allegheny . .	+ 40 27 41.6	− 11 21.6	9.999391	+ 0 11 50.89	+ 5 20 2.93
Altona . . .	+ 53 32 45.3	− 11 0.8	9.999063	− 5 47 58.39	− 0 39 46.35
Amherst . . .	+ 42 22 17.1	− 11 27.5	9.999343	− 0 18 7.37	+ 4 50 4.67
Annapolis . .	+ 38 58 53.5	− 11 15.0	9.999428	− 0 2 15.60	+ 5 5 56.44
Ann Arbor . .	+ 42 16 48.0	− 11 27.3	9.999346	+ 0 26 43.10	+ 5 34 55.14
Arcetri . . .	+ 43 45 14.4	− 11 29.9	9.999308	− 5 53 15.15	− 0 45 3.11
Armagh . . .	+ 54 21 12.7	− 10 54.9	9.999043	− 4 41 36.54	+ 0 26 35.5
Athens . . .	+ 37 58 20.0	− 11 9.4	9.999453	− 6 43 7.74	− 1 34 55.7
Beloit . . .	+ 42 30 9.0	− 11 27.8	9.999340	+ 0 47 55.26	+ 5 56 7.30
Berlin . . .	+ 52 30 16.7	− 11 7.7	9.999088	− 6 1 46.95	− 0 53 34.91
Berne . . .	+ 46 57 8.7	− 11 29.2	9.999227	− 5 37 58.04	− 0 29 46.0
Besançon . .	+ 47 14 59.0	− 11 28.7	9.999219	− 5 32 9.24	− 0 23 57.20
Bethlehem . .	+ 40 36 23.9	− 11 22.2	9.999388	− 0 6 40.19	+ 5 1 31.85
Birr Castle . .	+ 53 5 47.0	− 11 3.9	9.999074	− 4 36 31.14	+ 0 31 40.9
Bologna . . .	+ 44 29 47.0	− 11 30.5	9.999289	− 5 53 36.64	− 0 45 24.6
Bonn . . .	+ 50 43 45.0	− 11 17.3	9.999132	− 5 36 35.33	− 0 28 23.29
Bordeaux . .	+ 44 50 16.7	− 11 30.7	9.999281	− 5 6 6.60	+ 0 2 5.44
Bothkamp . .	+ 54 12 9.6	− 10 56.0	9.999047	− 5 48 42.84	− 0 40 30.8
Breslau . . .	+ 51 6 56.5	− 11 15.4	9.999122	− 6 16 20.75	− 1 8 8.71
Brussels . . .	+ 50 51 10.5	− 11 16.8	9.999129	− 5 25 40.64	− 0 17 28.6
Cambridge (*England*)	+ 52 12 51.6	− 11 9.4	9.999095	− 5 8 34.79	− 0 0 22.75
Cambridge (*Mass.*) .	+ 42 22 47.6	− 11 27.6	9.999343	− 0 23 41.05	+ 4 44 30.99
Cape of Good Hope	− 33 56 3.4	+ 10 39.0	9.999550	− 6 22 6.78	− 1 13 54.74
Chapultepec . .	+ 19 25 17.5	− 7 12.0	9.999841	+ 1 28 26.20	+ 6 36 38.24
Charkow. . .	+ 50 0 10.2	− 11 20.5	9.999150	− 7 33 6.74	− 2 24 54.7
Chicago . . .	+ 41 50 1.0	− 11 26.2	9.999357	+ 0 42 14.69	+ 5 50 26.73
Christiania . .	+ 59 54 43.7	− 10 0.2	9.998914	− 5 51 5.89	− 0 42 53.85
Cincinnati (*New Obs.*)	+ 39 8 19.5	− 11 15.8	9.999424	+ 0 29 29.25	+ 5 37 41.29
Cincinnati (*Old Obs.*)	+ 89 6 26.5	− 11 15.6	9.999425	+ 0 29 47.01	+ 5 37 59.05
Clinton . . .	+ 43 3 17.0	− 11 28.9	9.999326	− 0 6 34.65	+ 5 1 37.39
Coimbra . . .	+ 40 12 25.8	− 11 20.6	9.999398	− 4 34 37.54	+ 0 33 34.5
Copenhagen . .	+ 55 41 13.6	− 10 43.9	9.999011	− 5 58 30.96	− 0 50 18.92
Cordoba . . .	− 31 25 15.5	+ 10 13.5	9.999608	− 0 51 23.84	+ 4 16 48.2
Cracow . . .	+ 50 3 50.0	− 11 20.3	9.999149	− 6 28 2.41	− 1 19 50.37
Dantzig . . .	+ 54 21 18.0	− 10 54.9	9.999043	− 6 22 51.34	− 1 14 39.3
Dorpat . . .	+ 58 22 47.4	− 10 17.6	9.998948	− 6 55 5.54	− 1 46 53.5
Dresden . . .	+ 51 2 16.8	− 11 15.8	9.999124	− 6 3 6.88	− 0 54 54.84
Dublin . . .	+ 53 23 13	− 11 1.9	9.999066	− 4 42 50.04	+ 0 25 22
Düsseldorf . .	+ 51 12 25	− 11 15.0	9.999120	− 5 35 17.04	− 0 27 5
Dun Echt . .	+ 57 9 36	− 10 30.2	9.998977	− 4 58 32.04	+ 0 9 40.0
Durham . . .	+ 54 46 6.2	− 10 51.6	9.999033	− 5 1 52.24	+ 0 6 19.8
Edinburgh . .	+ 55 57 23.2	− 10 41.5	9.999005	− 4 55 28.99	+ 0 12 43.05

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Florence . . .	+ 43 46 4.1	− 11 29.9	9.999308	− 5 53 13.54	− 0 45 1.5
Geneva . . .	+ 46 11 58.8	− 11 30.1	9.999246	− 5 32 48.81	− 0 24 36.77
Georgetown . .	+ 38 54 26.2	− 11 14.6	9.999430	+ 0 0 6.20	+ 5 8 18.24
Glasgow (*Missouri*).	+ 39 13 45.6	− 11 16.2	9.999422	+ 1 3 5.93	+ 6 11 17.97
Glasgow (*Scotland*).	+ 55 52 42.8	− 10 42.2	9.999006	− 4 51 1.44	+ 0 17 10.6
Göttingen . .	+ 51 31 47.9	− 11 13.3	9.999112	− 5 47 58.28	− 0 39 46.24
Gotha . . .	+ 50 56 37.5	− 11 16.3	9.999127	− 5 51 2.57	− 0 42 50.53
Greenwich . .	+ 51 28 38.4	− 11 13.6	9.999113	− 5 8 12.04	0 0 0
Hamburg . .	+ 53 33 7.0	− 11 0.8	9.999062	− 5 48 5.74	− 0 39 53.7
Hanover . . .	+ 43 42 15	− 11 29.8	9.999309	− 0 19 4.13	+ 4 49 7.91
Hastings-on-Hudson	+ 40 59 25	− 11 23.6	9.999378	− 0 12 42.4	+ 4 55 29.64
Haverford . .	+ 40 0 40.1	− 11 19.8	9.999402	− 0 6 59.34	+ 5 1 12.70
Helsingfors . .	+ 60 9 43.3	− 9 57.1	9.998909	− 6 48 1.20	− 1 39 49.16
Hongkong . .	+ 22 18 12.2	− 8 3.8	9.999792	−12 44 53.94	− 7 36 41.9
Hudson . . .	+ 41 14 42.6	− 11 24.4	9.999371	+ 0 17 32.12	+ 5 25 44.16
Ipswich . . .	+ 52 0 33.0	− 11 11.0	9.999100	− 5 13 7.84	− 0 4 55.80
Karlsruhe . .	+ 49 0 29.6	− 11 24.2	9.999175	− 5 41 48.55	− 0 33 36.51
Kasan . . .	+ 55 47 24.2	− 10 43.0	9.999009	− 8 24 40.94	− 3 16 28.9
Kew . . .	+ 51 28 6	− 11 13.6	9.999114	− 5 6 56.94	+ 0 1 15.1
Kiel . . .	+ 54 20 29.7	− 10 55.0	9.999043	− 5 48 47.80	− 0 40 35.76
Kiew . . .	+ 50 27 11.1	− 11 18.6	9.999139	− 7 10 12.68	− 2 2 0.64
Königsberg . .	+ 54 42 50.6	− 10 52.0	9.999034	− 6 30 10.95	− 1 21 58.91
Kremsmünster .	+ 48 3 23.7	− 11 27.0	9.999199	− 6 4 44.24	− 0 56 32.2
Leiden . . .	+ 52 9 20.0	− 11 9.8	9.999097	− 5 26 8.39	− 0 17 56.35
Leipzig . . .	+ 51 20 6.3	− 11 14.3	9.999117	− 5 57 46.06	− 0 49 34.02
Leyton . . .	+ 51 34 34	− 11 13.0	9.999111	− 5 8 11.17	+ 0 0 0.87
Lisbon (*Marine Obs.*)	+ 38 42 17.6	− 11 13.5	9.999435	− 4 31 47.04	+ 0 36 25.0
Lisbon (*Royal Obs.*)	+ 38 42 31.3	− 11 13.6	9.999435	− 4 31 27.36	+ 0 36 44.68
Liverpool . .	+ 53 24 4	− 11 1.8	9.999066	− 4 55 54.84	+ 0 12 17.2
Lübec . . .	+ 53 51 31.2	− 10 58.6	9.999055	− 5 50 57.59	− 0 42 45.55
Lund . . .	+ 55 41 52.1	− 10 43.8	9.999011	− 6 0 57.07	− 0 52 45.03
Lyons . . .	+ 45 41 40.0	− 11 30.5	9.999259	− 5 27 19.90	− 0 19 7.86
Madison . . .	+ 43 4 37.0	− 11 28.9	9.999325	+ 0 49 25.79	+ 5 57 37.83
Madras . . .	+ 13 4 8.1	− 5 3.3	9.999926	−10 29 11.46	− 5 20 59.42
Madrid . . .	+ 40 24 30.0	− 11 21.4	9.999393	− 4 53 26.64	+ 0 14 45.4
Manheim . .	+ 49 29 11.0	− 11 22.5	9.999163	− 5 42 2.56	− 0 33 50.52
Marburg . . .	+ 50 48 46.9	− 11 16.9	9.999130	− 5 43 17.04	− 0 35 5.0
Markree . . .	+ 54 10 31.8	− 10 56.2	9.999047	− 4 34 23.64	+ 0 33 48.4
Marseilles . .	+ 43 18 19.1	− 11 29.3	9.999320	− 5 29 46.68	− 0 21 34.64
Melbourne . .	− 37 49 53.3	+ 11 8.6	9.999456	−14 48 6.18	− 9 39 54.14
Mexico . . .	+ 19 26 1.3	− 7 12.2	9.999840	+ 1 28 14.63	+ 6 36 26.67
Milan . . .	+ 45 27 59.2	− 11 30.6	9.999265	− 5 44 58.01	− 0 36 45.97
Modena . . .	+ 44 38 52.8	− 11 30.6	9.999285	− 5 51 54.84	− 0 43 42.8
Montsouris . .	+ 48 49 18.0	− 11 24.8	9.999180	− 5 17 32.72	− 0 9 20.68
Moscow . . .	+ 55 45 19.8	− 10 43.3	9.999009	− 7 38 28.94	− 2 30 16.9
Mount Hamilton .	+ 37 20 23.5	− 11 5.5	9.999468	+ 2 58 22.05	+ 8 6 34.09
Munich . . .	+ 48 8 45.5	− 11 26.7	9.999197	− 5 54 38.17	− 0 46 26.13

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Naples . . .	+ 40 51 45.4	− 11 23.1	9.999381	− 6 5 12.94	− 0 57 0.9
Nashville . .	+ 36 8 58.2	− 10 57.3	9.999497	+ 0 38 55.93	+ 5 47 7.97
Natal . . .	− 29 50 47.0	+ 9 55.2	9.999642	− 7 10 13.20	− 2 2 1.16
Neuchatel . .	+ 46 59 51.0	− 11 29.1	9.999226	− 5 36 2.24	− 0 27 50.2
New Haven . .	+ 41 18 36.5	− 11 24.6	9.999370	− 0 16 29.90	+ 4 51 42.14
New York (*Columb. Coll.*)	+ 40 45 23.1	− 11 22.7	9.999384	− 0 12 18.40	+ 4 55 53.64
New York (RUTHERFURD)	+ 40 43 48.5	− 11 22.6	9.999384	− 0 12 15.00	+ 4 55 57.04
Nice . . .	+ 43 43 16.7	− 11 29.8	9.999309	− 5 37 24.24	− 0 29 12.20
Nicolaeff . . .	+ 46 58 20.6	− 11 29.2	9.999226	− 7 16 6.14	− 2 7 54.1
Odessa . . .	+ 46 28 36	− 11 29.8	9.999239	− 7 11 14.34	− 2 3 2.3
Ogden . . .	+ 41 13 8.6	− 11 34.3	9.999372	+ 2 19 47.52	+ 7 27 59.56
O-Gyalla . . .	+ 47 52 43.4	− 11 27.4	9.999204	− 6 20 57.63	− 1 12 45.59
Olmütz . . .	+ 49 35 43	− 11 22.1	9.999160	− 6 17 14.64	− 1 9 2.6
Oxford (*Mississippi*)	+ 34 22 12.6	− 10 42.9	9.999540	+ 0 49 55.05	+ 5 58 7.09
Oxford (*Radcliffe*) .	+ 51 45 36.0	− 11 12.0	9.999106	− 5 3 9.44	+ 0 5 2.6
Oxford (*University*)	+ 51 45 34.2	− 11 12.0	9.999106	− 5 3 11.64	+ 0 5 0.40
Padua . . .	+ 45 24 2.5	− 11 30.6	9.999266	− 5 55 41.17	− 0 47 29.13
Palermo . . .	+ 38 6 44	− 11 10.2	9.999449	− 6 1 37.04	− 0 53 25.0
Paramatta . .	− 33 48 49.8	+ 11 37.8	9.999553	−15 12 18.24	−10 4 6.2
Paris . . .	+ 48 50 11.8	− 11 24.8	9.999179	− 5 17 32.99	− 0 9 20.95
Philadelphia . .	+ 39 57 7.5	− 11 19.5	9.999404	− 0 7 33.58	+ 5 0 38.46
Plonsk . . .	+ 52 37 40.0	− 11 6.9	9.999085	− 6 29 44.05	− 1 21 32.01
Pola . . .	+ 44 51 49.0	− 11 30.6	9.999280	− 6 3 35.22	− 0 55 23.18
Portsmouth . .	+ 50 48 3.0	− 11 17.0	9.999130	− 5 3 48.14	+ 0 4 23.90
Potsdam . . .	+ 52 22 56	− 11 8.4	9.999091	− 6 0 29.04	− 0 52 17
Poughkeepsie . .	+ 41 41 18	− 11 25.8	9.999360	− 0 12 38.44	+ 4 55 33.6
Prague . . .	+ 50 5 18.8	− 11 20.2	9.999148	− 6 5 53.44	− 0 57 41.4
Princeton . .	+ 40 20 57.8	− 11 21.2	9.999394	− 0 9 34.54	+ 4 58 37.50
Pulkowa . . .	+ 59 46 18.7	− 10 1.8	9.998917	− 7 9 30.71	− 2 1 18.67
Quebec . . .	+ 46 48 17.3	− 11 29.4	9.999231	− 0 23 22.74	+ 4 44 49.3
Rio de Janeiro .	− 22 54 23.8	+ 8 14.0	9.999782	− 2 15 30.63	+ 2 52 41.41
Rochester . .	+ 43 9 16.8	− 11 29.0	9.999324	+ 0 2 9.74	+ 5 10 21.78
Rome (*Coll. Rom.*) .	+ 41 53 53.6	− 11 26.3	9.999355	− 5 58 6.74	− 0 49 54.70
San Fernando . .	+ 36 27 41.5	− 10 59.5	9.999490	− 4 43 22.44	+ 0 24 49.6
Santiago de Chile .	− 33 26 42.0	+ 10 34.4	9.999651	− 0 25 25.74	+ 4 42 46.30
Schwerin . .	+ 53 37 38.2	− 11 0.2	9.999061	− 5 53 52.74	− 0 45 40.7
Senftenberg . .	+ 50 5 10.1	− 11 20.2	9.999148	− 6 14 2.64	− 1 5 50.6
South Hadley . .	+ 42 15 18.2	− 11 27.3	9.999346	− 0 17 51.75	+ 4 50 20.29
Speier . . .	+ 49 18 55.4	− 11 23.2	9.999167	− 5 41 57.64	− 0 33 45.6
St. Louis . . .	+ 38 38 3.6	− 11 13.2	9.999437	+ 0 52 37.07	+ 6 0 49.11
St. Petersburg .	+ 59 56 29.7	− 9 59.8	9.998913	− 7 9 25.54	− 2 1 13.5
Stockholm . .	+ 59 20 33.0	− 10 6.9	9.998927	− 6 20 26.04	− 1 12 14.00
Stonyhurst . .	+ 53 50 40	− 10 58.7	9.999055	− 4 58 19.36	+ 0 9 52.68
Strassburg (*New Obs.*)	+ 48 34 59.7	− 11 25.5	9.999186	− 5 39 16.69	− 0 31 4.65
Strassburg (*Old Obs.*)	+ 48 34 53.8	− 11 25.5	9.999186	− 5 39 14.53	− 0 31 2.49
Sydney . . .	− 33 51 41.1	+ 10 38.3	9.999552	−15 13 1.58	−10 4 49.54
Taschkent . .	+ 41 19 32.2	− 11 24.7	9.999369	− 9 45 22.84	− 4 37 10.80

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Toulouse . . .	+ 43 36 47	− 11 29.7	9.999312	− 5 14 3.14	− 0 5 51.1
Turin	+ 45 4 6.0	− 11 30.7	9.999275	− 5 39 0.44	− 0 30 48.4
Twickenham . .	+ 51 27 4.2	− 11 13.7	9.999114	− 5 6 58.94	+ 0 1 13.1
Univ. of Virginia .	+ 38 2 1.2	− 11 9.8	9.999448	+ 0 5 53.18	+ 5 14 5.22
Upsala . . .	+ 59 51 31.5	− 10 0.8	9.998915	− 6 18 42.23	− 1 10 30.19
Utrecht . . .	+ 52 5 10.5	− 11 10.2	9.999098	− 5 28 43.74	− 0 20 31.7
Venice . . .	+ 45 25 49.5	− 11 30.6	9.999266	− 5 57 37.44	− 0 49 25.4
Vienna (*Josephstadt*)	+ 48 12 53.8	− 11 26.6	9.999195	− 6 13 37.34	− 1 5 25.3
Vienna (*New Obs.*) .	+ 48 13 55.4	− 11 26.5	9.999195	− 6 13 33.26	− 1 5 21.22
Vienna (*Old Obs.*) .	+ 48 12 35.5	− 11 26.6	9.999195	− 6 13 43.78	− 1 5 31.74
Warsaw . . .	+ 52 13 5.7	− 11 9.4	9.999095	− 6 32 19.44	− 1 24 7.4
Washington . .	+ 38 53 38.8	− 11 14.5	9.999430	0 0 0	+ 5 8 12.04
West Point . .	+ 41 23 31	− 11 24.9	9.999368	− 0 12 22.71	+ 4 55 49.33
Wilhelmshaven .	+ 53 31 52.0	− 11 0.9	9.999063	− 5 40 47.25	− 0 32 35.21
Williamstown (*Mass.*)	+ 42 42 49	− 11 28.3	9.999334	− 0 15 18.6	+ 4 52 53.44
Williamstown (*Victoria*)	− 37 52 7.2	+ 11 8.8	9.999455	−14 47 50.84	− 9 39 38.8
Wilna . . .	+ 54 41 0	− 10 52.3	9.999035	− 6 49 23.94	− 1 41 11.9
Windsor . . .	− 33 36 28.9	+ 10 35.9	9.999558	−15 11 32.81	−10 3 20.77
Zürich . . .	+ 47 22 40.0	− 11 28.5	9.999216	− 5 42 24.64	− 0 34 12.6

ON THE ARRANGEMENT AND USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

PART I—THE EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

THE greater portion of this Ephemeris, embracing the positions of the sun and moon; the distances of the moon from the centres of the sun and the four most conspicuous planets, and from certain fixed stars; the ephemerides of the planets Mercury, Venus, Mars, Jupiter, and Saturn, is designed for the special use of navigators. The remainder contains the ephemerides of Uranus and Neptune, the heliocentric co-ordinates of the seven major planets, the rectangular equatorial co-ordinates of the sun, the moon's longitude and latitude, data for the libration of the moon, the obliquity of the ecliptic, the equation of the equinoxes, etc.

TIME.

Astronomers make use of several different kinds of time; mean solar time; true, or apparent solar time; and sidereal time.

Solar Time.—Solar time is that used for all the purposes of ordinary life, and is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour-angle of the sun is called *Solar Time.* This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the same meridian are not exactly equal, owing to the varying motion of the earth around the sun, and to the obliquity of the ecliptic. The intervals between the sun's transits over the meridian being unequal it is impossible to regulate a clock or chronometer so that it shall accurately follow the sun.

To avoid the irregularity which would arise from using the true sun as the measure of time, a fictitious sun, called the *Mean Sun*, is supposed to move in the equator with a uniform velocity. This mean sun is supposed to keep, on the average, as near the real sun as is consistent with perfect uniformity of motion; it is sometimes in advance of it, and sometimes behind it, the greatest deviation being about 16 minutes of time.

Mean Solar Time, which is perfectly equable in its increase, is measured by the motion of this mean sun. The clocks in ordinary use and the chronometers used by navigators are regulated to mean solar time.

True, or *Apparent Solar Time* is measured by the motion of the real sun.

The difference between apparent and mean time is called the *Equation of Time.* By means of it, we change apparent to mean time, or the reverse. Thus, if the apparent time be given, the mean time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I of the Calendar for each month. If the mean time be given, the apparent time is obtained by applying the equation of time as directed by the precept on page II of the Calendar.

Sidereal Time.—Sidereal time is measured by the daily motion of the stars; or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascension of the stars is counted. This point is the vernal epuinox, and its hour-angle is called *Sidereal Time.* Astronomical clocks, regulated to sidereal time, are called sidereal clocks.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over the meridian, and its next succeeding return to the same meridian. It is about 3^m 56^s shorter than the mean solar day; 365¼ solar days, or a year, being divided into 366¼ sidereal days. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian. About March 21st of each year the sidereal clock agrees with the mean time, or ordinary clock, and the former gains on the latter about 3^m 56^s per day, so that at the end of a year it will have gained an entire day, and will again agree with the mean time clock.

Day.—The *Civil Day*, according to the customs of society, commences at midnight, and comprises twenty-four hours from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each, of which the first is marked A. M., and the last is marked P. M.

The *Astronomical Day* commences at noon on the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical as well as the civil time may be either apparent or mean, according as it is reckoned from apparent noon or from mean noon.

The civil day begins twelve hours before the astronomical day; therefore the first period of the civil day answers to the last part of the preceding astronomical day, and the last period of the civil day corresponds to the first part of the same astronomical day. Thus, January 9th, 2 o'clock, A. M., civil time, is January 8th, 14^h, astronomical time; and January 9th, 2 o'clock, P. M., civil time, is also January 9th, 2^h, astronomical time. The rule, then, for the transformation of civil time into astronomical time is this:—*If the civil time is marked A. M., take one from the day and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.*

To change astronomical to civil time, we simply write P. M. after it, if it is less than 12 *hours. If greater than* 12 *hours, we subtract* 12 *hours from it, add* 1 *to the days, and write A. M.* For example, January 3d, 23 hours, astronomical time, is January 4th, 11 o'clock, A. M. civil time.

If the longitude from Greenwich be expressed in time, and, when *west*, *added* to the local time, or, when *east*, *subtracted* from the local time, the result is the corresponding Greenwich time. If the local mean time is used, the result is the Greenwich mean time, which ordinarily is that required for the use of this Ephemeris. The rule is the same, whether we use mean or sidereal time.

THE CALENDAR.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, the contents of which are as follow:—

Page I contains, for Greenwich apparent noon of each day, *The Sun's Apparent Right Ascension* and *Declination*, and the *Equation of Time*. Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of any quantity for any given Greenwich apparent time. The hourly differences are given for the instant of apparent noon at Greenwich, and, when greater accuracy is required, should be first interpolated for half the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is 0^{h}0^{m}0^s. The longitude from Greenwich expressed in time, if west, is at that instant the Greenwich apparent time, or time after Greenwich apparent noon; if east, it is time before

Greenwich apparent noon. The longitude of any place is therefore employed in reducing the quantities on this page to apparent noon at the place.

The right ascension of the sun thus reduced is the sidereal time of local apparent noon. The difference between it and the clock time of the meridian passage of the sun is the error of the clock on sidereal time.

The declination of the sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the sun.

As an example of the use of page I: —

Let the sun's declination be required at apparent noon, 1893, May 31, at a place whose longitude is 179° 40′, or 11ʰ 58ᵐ 40ˢ east from Greenwich:

		h	m	s
Local apparent time . . .	May 31,	0	0	0
Longitude from Greenwich (subtractive)	. .	11	58	40
Greenwich apparent time . . .	May 30,	12	1	20

Reducing the minutes and seconds to decimals of an hour, we find that this moment is 12ʰ.022 after Greenwich apparent noon on May 30, or 11ʰ.978 before Greenwich apparent noon on May 31.

On page 74 of the Ephemeris we find that the change of declination in one hour is

May 30, at Greenwich apparent noon . . .	21″.83
May 31, at Greenwich apparent noon . . .	20.89
Difference for one day	0.94

If we want to be very exact, we find the amount of this hourly difference for the time which is half way between Greenwich noon and the time of observation; that is, for 6 hours after Greenwich noon of the 30th, this being half of 12 hours. Six hours is 0.25 of a day; so the calculation is as follows: —

Difference for one hour, May 30	21″.83
Change for 0.25 of a day or 0″.96 × 0.25 . . .	0.23
Difference at 6 hours after noon	21.60

$$21''.60 \times 12.022 = 259''.7 = 4'\ 19''.7$$

Declination at Greenwich noon, May 30 . . .	N. 21° 51′ 3″.4
Change in 12.022 hours (additive) . . .	4 19.7
Sun's declination at time of observation . . .	N. 21 55 23.1

When the time of observation is only a few hours before Greenwich noon, it may be better to count the longitude backward from this nearest noon. Thus, in the example just given, the time is 11ʰ.978 before Greenwich noon of May 31; half this interval is about 0.25 of a day, and the hourly motion for the middle of the interval is 21″.125. Then, we find: —

Declination at Greenwich noon, May 31 . .	N. 21° 59′ 36″.1
Product of 21″.125 × 11.978 = 253″.0 (subtractive) .	4 13.0
Sun's declination at time of observation . . .	N. 21 55 23.1

It will always be well to make the calculation by both methods, as their agreement will show both to be right.

At sea it is ordinarily sufficient to have the declination to the nearest half minute, and the reduction may be found by Table 12 of BOWDITCH's *American Practical Navigator.*

The equation of time, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the apparent time, or the time given by an observation of the sun, to obtain the mean time. The heading of the column directs the manner in which the equation is to be applied. When there is a change in the course of the month from addition to subtraction or the reverse (as in the months of April and June), the two different directions are separated by a line, while a corresponding line below points out the dates between which the change takes place. The equation of time, as given on page I, is the mean time of apparent noon, or the hour-angle of the mean sun at that instant.

The Sun's Semidiameter and the *Sidereal Time of Semidiameter Passing Meridian* are also given on page I. The sun's semidiameter is used in reducing the altitude of the upper or lower limb of the sun to the altitude of the center; and in reducing the angular distance of the limb from the moon or some other object, to the distance from the center of the sun. The sidereal time of semidiameter passing the meridian is employed in obtaining the passage of the sun's center over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the first, or western, limb; and to be subtracted from the time of transit of the second, or eastern, limb.

Page II contains, for Greenwich mean noon of each day, *The Sun's Apparent Right Ascension*, and *Declination*, the *Equation of Time*, and the *Sidereal Time of Mean Noon.* The hourly changes of these quantities are also given, and may be used in reducing them to any Greenwich mean time. The hourly changes may be first interpolated for half the Greenwich time, when great precision is required, in the way described in explaining the calculation of the declination.

The right ascension and declination on pages I and II are affected by aberration, and therefore denote the *apparent* position of the *true* sun. Page II is more conveniently used when the mean time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to mean time. The quantities on this page can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the mean time from observations of the sun, and the latitude from observations out of the meridian. The heading of the column directs the manner in which it is to be applied to mean time to obtain the apparent time.

The equation of time, as given on page II, is the apparent time of mean noon; and is equivalent to the hour-angle of the true sun at the instant of mean noon.

The sidereal time of mean noon is also the right ascension of the mean sun at Greenwich mean noon. It may be reduced for the longitude, or to any Greenwich mean time, by using the hourly difference, 9^s.8565; or by Table III, appended to this volume, for reducing intervals of mean solar to sidereal time. Table 9 of Bowditch's *Navigator* may be used for the same purpose.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting mean time to sidereal time. We first find the Greenwich mean time, then the R. A. of the mean sun for this time, as last explained: this being added to the local mean time will give the sidereal time.

The sidereal time of mean noon, reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a sidereal interval to a mean time interval, in Table II, appended to this volume, or Table 8 of Bowditch's *Navigator*, will give the mean time required. This reduction may also be found by multiplying 9^s.8296 by the hours and parts of an hour of the given sidereal time.

As examples of the use of page II: —

1.—Let the sun's right ascension and the equation of time be required for 1893, May 15, 9^h 2^m 30^s, A. M., mean time, at a place whose longitude is 100° 10′, or 6^h 40^m 40^s, west of Greenwich.

		h	m	s
Local astronomical mean time . . .	May 14,	21	2	30
Longitude from Greenwich (additive)		6	40	40
Greenwich mean time	May 15,	3	43	10=3^h.7194

Sun's Right Ascension.	h	m	s	*Equation of Time.*	m	s
May 15, Greenwich noon .	3	29	54.18	May 15, noon . .	3	50.56 (additive)
H. D. $9^s.890$ × 3.7194 . .	+	0	36.78	H. D. — $0^s.034$ × 3.72	—	0.13
	3	30	30.96		3	50.43

In this case, the hourly differences interpolated to half the interval, or $1^h.9$ after noon, have been used. The equation of time in this example is additive to mean time. Its reduction could also have been found by Table 12 of Bowditch's *Navigator*, but to seconds only.

2.—If the sidereal time is required for the same date and time, we have:—

	h	m	s
May 15, Sidereal Time (at Greenwich mean noon)	3	33	44.74
Hourly difference $9^s.8565$ × 3.7194	+	0	36.66
Add the local astronomical mean time	21	2	30.00
The required sidereal time is (rejecting 24^h)	0	36	51.40

The reduction $0^m\,36^s.66$ could have been found in Table III corresponding to the Greenwich mean time $3^h\,43^m\,10^s$. Also, by Table 9 of Bowditch's *Navigator*, the reduction is $0^m\,36^s.7$.

3.—On 1893, May 15, A. M., at a place whose longitude is 100° 10′ W., suppose the sidereal time to be $0^h\,36^m\,37^s.16$, and that the corresponding mean time is required.

The astronomical day is May 14; the longitude in time, $+6^h\,40^m\,40^s$, or $+6^h.678$.

	h	m	s
May 14, Sidereal Time (at Greenwich mean noon)	3	29	48.18
The H. D. $9^s.8565$ × 6.678, or the reduction for $6^h\,40^m\,40^s$ in Table III .	+	1	5.82
The sidereal time of local mean noon	3	30	54.00
The given sidereal time ($+24^h$, if necessary for the following subtraction) .	24	36	37.16
Subtracting the first from the second gives the sidereal interval from noon .	21	5	43.16 = $21^h.09532$
— $9^s.8296$ × 21.0795, or the reduction for $21^h\,4^m\,46^s.14$ in Table II . .	—	3	27.36
The required astronomical mean time is . . . May 14,	21	2	15.80

Page III contains, for Greenwich mean noon of each day, *The Sun's True Longitude* and *Latitude*, and the *Logarithm of the Radius Vector of the Earth.* The longitudes of the sun are the true longitudes, not corrected for aberration. The longitude is given in two columns, headed λ and λ'; λ representing the sun's longitude counted from the true equinox of the date; and λ', the same co-ordinate counted from the mean equinox of the beginning of the year, (January $0^d.0$). A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The latitude is referred to the ecliptic of the date.

The last column on page III contains the *Mean Time of Sidereal Noon;* that is, the number of hours, minutes and seconds after Greenwich mean noon when the first point of Aries passes the meridian of Greenwich. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich sidereal time by means of the hourly difference, — $9^s.8296$. The reduction, however, can be taken directly from Table II for reducing intervals of sidereal time to mean solar time; or, approximately, from Table 8 of Bowditch's *Navigator*.

This column may be used in converting sidereal time to mean time instead of that on page II. As an illustration, let us take Example 3, above.

It is seen in advance that the sum of the mean time of sidereal noon and the given sidereal time is less than 24 hours. Were it more than 24 hours, the mean time of sidereal noon should be taken out for May 13, that is the preceding astronomical day.

	h	m	s
May 14, the mean time of Greenwich sidereal noon is . .	20	26	50.28
The H. D. — $9^s.8296$ × 6.678, or the reduction for long., Table II	—	1	5.64
The mean time of local sidereal noon	20	25	44.64
Add the given sidereal time	0	36	37.16 = $0^h.6103$
The sum is	21	2	21.80
— $9^s.8296$ × 0.6103, or the reduction for $0^h\,36^m\,37^s.2$ in Table II .	—	0	6.00
The required astronomical mean time . . May 14,	21	2	15.80

Page IV contains *The Moon's Semidiameter* and Equatorial *Horizontal Parallax*, for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time, in the same way as the sun's declination and the equation of time in the preceding examples. The sign plus or minus prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.272. It may also be obtained by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1893, June 11, 10^h, P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of June 11 is 4″.7; then,

$$12^h : 10^h = 4''.7 : 3''.9,$$

which is the correction to be added to the semidiameter at noon, because the semidiameter is increasing. The moon's semidiameter then, for June 11, 10^h, is 16′ 31″.6 + 3″.9, or 16′ 35″.5.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for half the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Upper Transit at Greenwich*, which is given on page IV to tenths of a minute, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude converted into time, the local time of the moon's meridian passage at any other place, may be computed. The reduction may be taken by simple inspection from Bowditch's Table 11. The last column of this page contains the *Age* of the moon, or the time elapsed since the preceding new moon, to tenths of a day.

Pages V—XII contain *The Moon's Right Ascension*, and *Declination*, for each day and hour of Greenwich mean time. They are accompanied with columns of differences for one minute, which are also given at each hour. The Greenwich mean time, which is required for taking out these quantities, may be taken from a well-regulated chronometer, or obtained by applying the longitude converted into time, to the local mean time of the observer. The right ascension or declination is taken out for the day and hour of the Greenwich mean time; the *Diff. for* 1 *Minute* multiplied by the minutes and parts of a minute of the Greenwich time, and the product added to, or subtracted from the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1893, May 1, $10^h\,10^m\,30^s$, astronomical mean time at Greenwich:—

	Right Ascension.		*Declination.*
	h m s		° ′ ″
May 1, 10^h	15 15 59.57		S. 20 17 23.2
Diff. $1^s.9853 \times 10.5$ . .	= + 20.84	10″.162 × 10.5 =	+ 1 6.7
May 1, $10^h\,10^m\,30^s$	15 16 20.41		S. 20 19 9.9

The differences interpolated for $5^m.2 = 0^h.09$ are, for the right ascension $1^s.9858$, and for the declination 10″.155, which may be used for greater precision.

Page XII contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII—XVIII contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, and from the four larger planets and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore astronomical. All the distances that can be observed on the same day, are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W. or E. is affixed to the name of the sun, planet or star, to indicate that it is on the west, or east side of the moon.

An observer on the earth's surface having measured a lunar distance, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the true or geocentric distance, that is, the distance as it would have appeared from the centre of the earth at the moment of observation. With this distance and the distances in the Ephemeris of the same bodies on the same day, the Greenwich mean time of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris, between every two successive distances, the logarithm of the seconds of time in which the distance changes 1″; or, as it is usually called, the *Proportional Logarithm of the Difference.* It is given for the middle instant of the two hours between which it is placed.

For computing the Greenwich time we have the following rule:—

Find in the Almanac the two distances between which the true distance falls; take out the nearer of these, the hours of Greenwich time over it, and the P. L. of Diff. between them.

Find the difference between the true distance and the distance taken from the Almanac; and from the proportional logarithm of this difference, as found in the Navigator, subtract the P. L. of Diff. taken from the Almanac.

The result is the proportional logarithm of an interval of time to be added to the hours of Greenwich time, taken from the Almanac, when the earlier Almanac-distance is used; to be subtracted from the hours of Greenwich time, when the later Almanac-distance is used.

Another method is, to add the common logarithm of the difference of the true and the Almanac-distances to the P. L. of Diff. of the Almanac; the sum will be the common logarithm of the correction to be applied to the hours of Greenwich time. Table 34 of Bowditch's *Navigator* saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the P. L. of Diff. in the Ephemeris varies, the Greenwich time found by the methods just described may not be sufficiently exact. To correct it for such variation, or second difference, take the difference between the P. L. of Diff. used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones). With this difference, and the first correction of the Greenwich time already found, enter Table I, appended to this volume, and take out the corresponding seconds, which are to be added to the approximate Greenwich time when the Prop. Logs. in the Ephemeris are decreasing; and subtracted when they are increasing.

Thus the Greenwich mean time of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer-time and the Greenwich mean time will be the error of the chronometer on Greenwich time as found from the lunar distance. In this way lunar distances can be used as a check upon the chronometer. By a series of carefully observed lunar distances on both sides of the moon, the chronometer-error may generally be ascertained within 20 or 30 seconds.

If the observer has found the local mean time of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the lunar distance will be his longitude. A longitude derived by this method should always be considered as uncertain by 5′ or more.

As an example of finding the Greenwich mean time from a lunar distance, suppose that in 1893, Oct. 10, the corrected distance of the moon's centre from that of Antares is 40° 10′ 20″:—

Corrected distance	40° 10′ 20″		
Distance in Ephemeris Oct. 10, VI^h . . .	40 21 32	P. L.	0.2835
Difference	0 11 12	P. L.	1.2061
	h m s	P. L.	0.9226
Time from VI^h (*after*)	+0 21 31		
Corr. for 2d Diff., Table I	− 0		
Greenwich mean time Oct. 10	6 21 31		

By a table of common logarithms, or a table of logarithms of small arcs, the reduction of the Greenwich time would be found thus :—

From Ephemeris	P. L.	0.2835
Diff. of distances, 11′ 12″ = 672″	log	2.8274
Red. of Greenwich time, 1291^s = 0^h 21^m 31^s	log	3.1109

The result is the same as by the previous method.

Pages 218—249 contain the geocentric ephemerides of the seven major planets. The positions are referred to the equator and true equinox of the date, and corrected for aberration; they are, therefore, apparent positions. All the data except meridian passage are given for the moment of Greenwich mean noon. The column *Meridian Passage* gives the hour, minute and tenth of that passage of the planet over the meridian of Greenwich which occurs next after the noon of the date.

The right ascension and declination of a planet are required whenever it has been observed for time, latitude or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples for the sun, previously given. The local mean time of passage across any other meridian can be found by dividing the daily differences by 24, and multiplying the quotient by the hours and fractions of the longitude of the place. The product is subtractive from the time of Greenwich passage when the place is east of Greenwich, and additive when west. The corrections can never exceed one-half the change for one day.

Pages 250—263 contain the heliocentric positions of the seven major planets, and the logarithms of their distances from the earth. The heliocentric longitude is reckoned, not from the true equinox, as in the preceding ephemerides, but from the mean equinox of the date. It is, therefore, necessary to apply nutation, if the longitude from the true equinox is required. The daily motion is given for the moment of Greenwich mean noon. The column *Reduction to Orbit* gives the correction to be applied to the heliocentric longitudes in order to obtain the longitude counted along the orbit of the planet. This longitude is equal to the distance of the node from the mean equinox, plus the distance of the planet from the node. The heliocentric latitude is counted from the moving plane of the ecliptic. The *Logarithm of Radius Vector* is the logarithm of the distance of the centre of the planet from that of the sun, at each Greenwich mean noon given in the first column. The last two columns give, in the same way, the logarithm of the true distance of the centre of the planet from that of the earth. The one column gives the quantity for the Greenwich noon indicated on the left hand side of the page, and the other for the noon which is midway between that date and the date next below it. In the case of Mercury, this intermediate date is mean noon of the day immediately following; in the case of Venus, Mars, Jupiter, and Saturn, it is mean noon of the second day following; and in the case of Uranus and Neptune, mean noon of the fourth day following.

Pages 264—271 contain the rectangular co-ordinates of the centre of the sun, referred to the centre of the earth as the origin, and to the true equator and equinox of each date as the circle and point of reference. Each co-ordinate is given first for Greenwich mean noon, and in the column following for mean midnight of the same day. The columns *Reduc. to Mean Eq'x of Jan.* 0 give the corrections to be applied to the co-ordinates for noon in order to obtain the corresponding co-ordinates referred to the mean equator and the mean equinox of January 0.

Pages 272—275 give the longitude and latitude of the moon for every Greenwich mean noon and midnight. Both quantities are referred to the true ecliptic and equinox of the date.

Pages 276 and 277 contain the position of the moon's equator and the mean longitude of the moon, and a table for computing the libration of the moon. The epochs of greatest libration of the moon, together with the formulæ for finding the libration in longitude and latitude are given on page 416.

Page 278 contains, for each tenth Greenwich mean noon, the values of the principal elements arising from the motion of the equinox, and also the aberration and parallax of the sun. The column *Apparent Obliquity of the Ecliptic* (HANSEN) gives the true inclination of the earth's equator to the ecliptic, without correction for the terms depending on the moon's longitude. The *Equation of Equinoxes* is really the astronomical nutation; that given *In Longitude* is the correction to be applied to the longitude of the body referred to the mean equinox, in order to obtain that longitude as referred to the true equinox. When the correction is positive, the true longitudes are greater than those referred to the mean equinox; while the contrary is true when the correction has the negative sign. The equation *In R. A.* is equal to that in longitude, multiplied by the cosine of the obliquity of the ecliptic.

The next column gives the *Precession of Equinoxes in Longitude*, from January 0 to each of the dates following. *The Sun's Aberration* is the quantity which is to be applied to the true longitude of the sun in order to obtain its apparent longitude. The correction being negative shows that the apparent longitude as affected by aberration is always less than the true longitude. The *Sun's Equatorial Horizontal Parallax*, given in the next column, is the angle subtended by the radius of the earth's equator, as seen from the centre of the sun.

PART II—THE EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Page 280 contains the formulæ for reducing the positions of the fixed stars, using the notation of Bessel, and the constants of Peters and Struve. The formulæ by which the star-numbers are computed are also given.

Pages 281—284 contain the logarithms of the *Besselian Star-Numbers*, *A*, *B*, *C*, *D*, for each Washington mean midnight. These numbers serve to reduce the mean place of a star at the beginning of the Besselian fictitious year to its apparent place at the dates for which the numbers are given. If used in accordance with the English and French notation, the pair of quantities *A* and *B* must be interchanged with the pair *C* and *D;* that is, *A* must be interchanged with *C*, and *B* with *D*. In the first column along with the solar day is given, for certain dates, the sidereal hour and tenth of midnight. The sidereal time for which any set of quantities is given can be found by interpolation from these numbers.

The following is an example of the reduction of a star to apparent place by the Besselian star-numbers:—

Computation of the apparent place of α Hydræ for 1893, March 8, for the upper transit at Washington.

(Star-Catalogue)	log a	0.4699	log b	7.8702	log c	8.7163 *n*	log d	8.6311
(Page 281)	log A	8.3547	log B	0.9204 *n*	log C	1.2648 *n*	log D	0.5983
(Star-Catalogue)	log a'	1.1901 *n*	log b'	9.8027 *n*	log c'	9.7160	log d'	9.0419
	log Aa	8.8246	log Bb	8.7906 *n*	log Cc	9.9811	log Dd	9.2294
	log Aa'	9.5448 *n*	log Bb'	0.7231 *n*	log Cc'	0.9808 *n*	log Dd'	9.6402

		h m s		° ′ ″
Mean Place, 1893.0, (page 296)	$\alpha_0=$	9 22 19.772	$\delta_0=$	− 8 11 42.17
	$Aa=$	+ 0.067	$Aa'=$	− 0.35
	$Bb=$	− 0.062	$Bb'=$	+ 5.28
	$Cc=$	+ 0.955	$Cc'=$	− 9.57
	$Dd=$	+ 0.169	$Dd'=$	+ 0.44
	$E=$	− 0.001	$\tau\mu'=$	0.00
	$\tau\mu=$	0.000		
Apparent Place, 1893, *Mar.* 8,	$\alpha=$	9 22 20.900	$\delta=$	− 8 11 46.37

Pages 285—292 contain the *Independent Star-Numbers*, which can be used for the same purpose. The column τ gives the fraction of the year from the beginning of the fictitious year to each date. These quantities are connected with those of Bessel by the relations given on page 280, where are also found the formulæ and precepts for the application of both systems of numbers. In order to use the Besselian numbers, it is necessary to have the values of the star-constants, a, b, c, d, a', b', c', d'. The independent star-numbers are given in order that the apparent place of the star may be determined when it is not convenient to compute these numbers.

The following is an example of the reduction of a star to apparent place by the independent star-numbers: —

Computation of the apparent place of α *Hydræ for* 1893, *March* 8, *for the upper transit at Washington.*

$\alpha_0 = 140^\circ\ 34'.9$ $\qquad \delta_0 = -\ 8^\circ\ 11'.7$
$G = 273\ \ 7.3$ $\qquad G + \alpha_0 = 53\ \ 42.2$
$H = 282\ \ 9.7$ $\qquad H + \alpha_0 = 62\ \ 44.6$

log $\frac{1}{15}$	8.8239	log $\frac{1}{15}$	8.8239	α_0 =	$9^h\ 22^m\ 19^s.772$
log g	0.9211	log h	1.2747	f =	+ 0.068
log sin $(G+\alpha_0)$	9.9063	log sin $(H+\alpha_0)$	9.9489	(g) =	− 0.066
log tan δ_0	9.1584 n	log sec δ_0	0.0044	(h) =	+ 1.126
log (g)	8.8097 n	log (h)	0.0519	$\tau\mu$ =	0.000
			Apparent R. A.,	α =	9 22 20.900
log g	0.9211	log h	1.2747	δ_0 =	− $8^\circ\ 11'\ 42''.17$
log cos $(G+\alpha_0)$	9.7723	log cos $(H+\alpha_0)$	9.6609	(g') =	+ 4.93
log (g')	0.6934	log sin δ_0	9.1539 n	(h') =	− 1.23
		log (h')	0.0895 n	(i) =	− 7.90
				$\tau\mu'$ =	0.00
			Apparent	δ =	− 8 11 46.37
log i	0.9023 n				
log cos δ_0	9.9956				
log (i)	0.8979 n				

Pages 293—301 contain the mean places of three hundred and eighty-three stars, for the beginning of the fictitious year 1893, or the moment when the sun's mean longitude is 280°.

The annual variations are to be considered as the differential coefficients of each co-ordinate with respect to the time at the beginning of the year.

In order that the list of mean places of stars may serve the purpose of a working-catalogue for the convenient use of astronomers, the position of each of the northern circumpolar stars is given in duplicate, one position being for the upper and the other for the lower culmination. The positions for the lower culmination are marked S. P. In this case, the right ascensions are the sidereal times at which the star crosses the lower meridian; and, in order to have the expressions for the co-ordinates congruous in all cases, the declinations are counted from the equator through the north pole, and therefore exceed 90°. The time of observation and the setting of the circle, in order to find a star on the meridian, are then obtained uniformly for all the stars.

Beginning with the volume of 1882, the number of stars has been greatly increased, in order to make the list more useful to field-astronomers. In order to show at a glance these additional stars, they are indicated in the list by an asterisk.

Pages 302—313 contain the apparent positions of the four north polar stars, α, δ and λ Ursæ Minoris, and 51 Cephei, for every upper transit at Washington. They include the terms depending on the moon's longitude. The mean solar time of transit is given in the column *Mean Solar Date*, in order that each transit above and below the pole may be readily identified. Suppose, for example, that the transit of Polaris below the pole on January 26th is to be found, and we wish to know whether it precedes or follows the upper transit of the same date. On page 302, we find that the upper transit occurs January 26.2; the lower transit, therefore, occurs January 26.7. But, the lower transit following that of July 1st (page 308), does not take place until July 2.3. Hence, the lower transit of July 1st precedes the upper one of the same date. A transit occurring very nearly at noon may also be identified without a computation to ascertain the actual mean-date, by simply noting the tenth of a day in the column of *Mean Solar Date.*

Pages 314—364 contain, for every tenth upper transit at Washington, the apparent places of those stars of the preceding list which are not marked with an asterisk. The mean solar date in each left hand column gives the day and tenth of the transit; so that each intermediate transit may be readily identified. Along with each co-ordinate is given, in small type, the change for ten days. This quantity is to be regarded as the differential coefficient corresponding to the dates for which the star-places are given.

Pages 365—376 contain the apparent right ascensions of all stars marked with an asterisk in the list of mean places. The apparent right ascension of each star is given only for that part of the year when it may readily be observed on the meridian. In the case of circumpolar stars, the right ascensions for lower, as well as upper, transit are given.

Pages 377—384 contain the apparent right ascension, declination, and semidiameter of the sun, and the sidereal time, all for Washington mean noon. Adjoining columns give the seconds of right ascension and of declination for apparent noon, that is, for the moment of transit of the sun's centre over the meridian of Washington. The hours and minutes of right ascension, and the degrees and minutes of declination are the same for both mean and apparent noon. In case they would have differed, the minute which would have been numerically larger is diminished by one, and the seconds increased by sixty, so that there is always a correspondence between the two numbers. The hourly motions in right ascension and declination are given for the moment of mean noon, but may be regarded as having the same values for apparent noon.

The *Equation of Time for Apparent Noon* is the correction to be applied to apparent time in order to obtain mean time. It is, therefore, mean time minus apparent time. Each number as given is the mean time of transit of the sun's centre over the meridian of Washington, counted from the nearest noon. The use of all the quantities is substantially the same as in the *Ephemeris for the Meridian of Greenwich.*

Pages 385—392 contain the right ascension, declination, semidiameter, and parallax of the moon, at the moment of transit over the meridian of Washington. The mean time given in the second column is that of transit of the moon's centre over this meridian. The differences for one hour of longitude are the amounts by which the local mean times of transit over a meridian one hour west of Washington exceed those given in the column *Mean Time of Transit*, supposing the rate of change to be uniform and equal to what it is at the moment of transit over the meridian of Washington. The next four columns need no especial explanation, except that the differences for one hour of longitude are computed as if the motion of the moon in right ascension were uniform. By means of them, the position of the moon can be computed with astronomical accuracy at the moment of transit over any meridian not exceeding one hour in longitude from that of Washington, by taking account of second differences. With greater longitudes of the place, the accuracy of the result obtained in this way will diminish. The columns of sidereal time of semidiameter passing meridian, etc., do not seem to need any explanation, except that they all refer to the moment of transit. The column *Bright Limbs* is given to indicate to the observer which limbs are illuminated. When two opposite limbs are both so nearly full that they can be well observed, both are indicated; and the one which is deficient is printed in smaller type. When the illumination is so nearly equal that no choice can be made between them, both are printed in large type.

Pages 393—408 contain the geocentric apparent right ascensions and declinations, semidiameters and horizontal parallaxes, of the seven major planets except Mars, for the moments of all those transits over the meridian of Washington, which can be observed.

PART III—PHENOMENA.

This portion of *The American Ephemeris and Nautical Almanac* gives the principal astronomical phenomena of the year, reduced to Washington mean time, except in the case of the eclipses and the data for the rings of Saturn, which are given in Greenwich mean time.

Pages 411—415 inclusive contain the elements necessary for computing the eclipses of the sun which occur during the year.

The eclipse-elements are given for the moment of conjunction of the sun and moon in right ascension. The subsequent tables and results are not, however, computed from these elements unchanged; but from the accurate positions of the two bodies as interpolated for each hour of the eclipse. The principal circumstances of each eclipse are as follow:—

On the line "Eclipse begins" is given the Greenwich mean time at which the earth first touches the moon's penumbra, and the longitude and latitude of the point of touching.

The "Central eclipse begins" when the axis of the moon's shadow first touches the earth, and the longitude and latitude of the point of touching follow.

"Central eclipse at noon" indicates the moment when the axis of the shadow is coincident with the plane of the meridian at the point of its intersection with the earth's surface. To the observer at this point, the eclipse will be central at the moment of apparent noon.

"Central eclipse ends" and "Eclipse ends" have the converse meaning of the beginning.

Maps of the Eclipses.—The regions in which each eclipse is visible, are shown upon the maps given in connection with them. From these maps may also be derived the approximate determination of the times of beginning and ending, and of the magnitude of the eclipses at any place. The dotted curves show the outlines of the shadow for each hour of Greenwich mean time and therefore pass through all the places where the eclipse begins or ends at that hour. To find at what hour the eclipse begins at any place, we determine by inspection between what pair of these curved lines the place is situated. The eclipse will then begin between these two hours of Greenwich mean time: the fraction of the hour may be determined by dividing the hour proportionally to the space which it represents on the map. This division may be a little more exact by allowing for the changes in this space as indicated by their varying width. The Greenwich mean time thus found must be reduced to local mean time by applying the longitude.

As an example, suppose we wish to find the time at which the eclipse of 1893, Oct. 9, begins and ends at San Francisco, Cal.

For the beginning we compare the distance of the place from the curves of 6^h and 7^h and we find it to correspond to about 24 minutes from the former, therefore the time of beginning is approximately $6^h\ 24^m$; for the end we compare the distance of the place from the curves of 9^h and 10^h and find it to be about 5 minutes from the former, therefore the approximate time of end is $8^h\ 55^m$, both of which are probably correct to within 2 or 3 minutes. Changing to local mean time the result will be:—

		Beginning.					Ending.	
		d	h	m			h	m
Greenwich mean time	Oct.	9	6	24.0			8	55.0
Longitude West			8	9.6			8	9.6
Local mean time	Oct.	8	22	14.4	Oct.	9	0	45.4

In the case of total and annular eclipses, a rough estimate of the magnitude of the eclipse may be obtained from the position of the place relatively to the central line and to the limit. On the central line, the eclipse is annular or total, while on the limit, the limb of the moon only grazes that of the sun.

More Accurate Computations.—A more accurate determination of the phases as visible at any point of the earth's surface may be obtained from the Besselian elements which are given for every ten minutes of Greenwich mean time. Their geometric signification is as follows:—

Let us imagine a plane passing through the centre of the earth, perpendicular to the right line joining the centres of the sun and moon. This latter line is the axis of the moon's shadow, and the plane is called the *fundamental plane*. We take the intersection of this plane with that of the earth's equator as the axis of X, and the centre of the earth as the origin of co-ordinates. The axis of Y is perpendicular to that of X, and directed toward the north; x and y are then the co-ordinates of the point in which the axis of the shadow intersects the fundamental plane. The angle d, of which the sine and cosine are both given, is the declination of that point of the celestial sphere toward which the axis of the shadow is directed; this direction being that from the earth toward the moon and sun. The angle μ is the Greenwich hour-angle of this same point of the celestial sphere.

The quantities l and l' are the radii of the shadow-cones upon the fundamental plane, l corresponding to the penumbra, and l' to the umbra, or annulus. The notation is that of CHAUVENET's *Spherical and Practical Astronomy*, in which l' is regarded as positive for an annular, and negative for a total eclipse.

The angles f and f', the tangents of which are given, are the angles which the elements of the respective shadow-cones make with the axis of the shadow; or, they are the semi-angles of the two cones.

At the bottom of the table are given the logarithms of the change of x, y and μ, in one minute, in order to facilitate the interpolation to any required moment.

The method of computing the eclipse from the given elements is as follows: It is premised that the moments of beginning and ending are those at which the distance of the observer from the axis of the shadow or penumbra is equal to the radius of the latter at the point of observation. To find such distance and radius we compute—

(1) The co-ordinates, ξ, η and ζ, of the observer, at some assumed moment of Greenwich mean time, as near as practicable to the true time of the required phase, together with their variations for one minute.

(2) The co-ordinates x and y of the axis of the shadow at the same moment, which, with their variations for one minute, are taken from the tables of elements.

(3) Hence, the position and motion of the observer relative to the axis of the shadow.

(4) The radius of the penumbra or umbra at a distance from the fundamental plane equal to that of the observer.

(5) Then, assuming the motions to be uniform, we determine the time required for the observer to be brought to a distance from the axis of the shadow equal to this radius.

The formulæ and directions for the several steps in the computation are as follow:—

(1) Find the geocentric co-ordinates of the station referred to the earth's equator, which are represented by $\rho \cos \varphi'$ and $\rho \sin \varphi'$, ρ being the distance from the centre of the earth, and φ' the geocentric latitude. These may be obtained from geodetic tables, or may be computed from the following table by the formulæ—

$$\rho \cos \varphi' = F \cos \varphi$$

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

φ being, as usual, the geographic latitude.

Table for Computing the Geocentric Co ordinates of a Place.

φ	Log F.		Log G.	
0°	0.00000		0.00302	
5	0.00001	1	0.00300	2
10	0.00005	4	0.00297	3
15	0.00010	5	0.00292	5
20	0.00018	8	0.00284	8
25	0.00027	9	0.00275	9
30	0.00038	11	0.00264	11
35	0.00050	12	0.00252	12
40	0.00062	12	0.00239	13
45	0.00075	13	0.00226	13
50	0.00088	13	0.00213	13
55	0.00101	13	0.00201	12
60	0.00113	12	0.00189	12
65	0.00124	11	0.00178	11
70	0.00133	9	0.00169	9
75	0.00141	8	0.00161	8
80	0.00146	5	0.00155	6
85	0.00150	4	0.00152	3
90	0.00151	1	0.00151	1

For the assumed Greenwich mean time of computation, take from the table of elements the values of sin d, cos d, and μ. Put:

λ, the longitude west from Greenwich. The co-ordinates of the observer will then be:—

$$\xi = \rho \cos \varphi' \sin (\mu - \lambda)$$
$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (\mu - \lambda)$$
$$\zeta = \rho \sin \varphi' \sin d + \rho \cos \varphi' \cos d \cos (\mu - \lambda)$$

and their variations in one minute of mean time will be:—

$$\xi' = [7.63992]\, \rho \cos \varphi' \cos (\mu - \lambda)$$
$$\eta' = [7.63992]\, \rho \cos \varphi' \sin d \sin (\mu - \lambda) = [7.63992]\, \xi \sin d$$

ζ' is not wanted.

(2) The co-ordinates x and y of the axis of the shadow are taken from the tables of elements for the same assumed moment of Greenwich mean time, together with their variations for one minute, which are equal to one-tenth of the differences of two consecutive numbers. The variations for one minute we represent by x' and y'. Their logarithms are given at the foot of the tables.

(3) The distance m and position-angle M of the axis of the shadow relative to the observer, and the relative motions, n and N, are computed by the formulæ:—

$$m \sin M = x - \xi$$
$$m \cos M = y - \eta$$
$$n \sin N = x' - \xi'$$
$$n \cos N = y' - \eta'$$

(4) The radius L of the shadow or penumbra at the distance ζ from the fundamental plane is computed by the formula

$$L = l - \zeta \tan f$$

l and f being found in the table of elements, and ζ computed in (1).

(5) If the time chosen for computation is exactly that of the beginning or end of the eclipse, we shall have—

$$m = L$$

But, as this condition can scarcely ever be fulfilled on a first trial, a correction τ to the assumed time is computed thus: Find the angle ψ from the equation,

$$\sin \psi = \frac{m \sin (M - N)}{L}$$

There will be two values to this angle, of which one will be in the first and the other in the second quadrant when sin ψ is positive, and one in the third and the other in the fourth when sin ψ is negative. But, simplicity will be gained by taking only that value of ψ for which cos ψ is positive. This value lies between the limits + 90° and − 90°. The correction τ to the assumed time will be found in minutes, from—

For beginning: $$\tau = -\frac{m \cos (M - N)}{n} - \frac{L \cos \psi}{n}$$

For ending: $$\tau = -\frac{m \cos (M - N)}{n} + \frac{L \cos \psi}{n}$$

One such pair of values of τ cannot, however, give the times of both beginning and ending with accuracy. To attain accuracy we must, in commencing the computation, assume two times, one near that of beginning, and another near that of ending. These approximate times may be derived from the chart of the eclipse. The computation for the first assumed time will give a small value of τ which, applied to the assumed time, will give a nearly correct time for the beginning of the eclipse, and a large value which, added to the assumed time, will give an inaccurate time of ending. The computation for the second assumed time will give a small and nearly correct value of τ, to be applied to the assumed time for the end, and a large negative and inaccurate one to be subtracted for the beginning. We shall thus deduce two times of each phase only one of which is to be considered approximately correct.

The more accurate times of beginning and ending may now be taken in place of the first assumed ones, and the computation may be repeated from the beginning, leading to a pair of values of τ, which should be very small and accurate. Such a repetition of the computation will in general be advisable, to guard against accidental numerical errors. The following theorem will, however, enable us to obtain a second approximation to the true times of each phase without repeating the computation.

THEOREM.—*The error of each result is approximately proportional to the square of the correction τ, multiplied by the sine of the sun's hour-angle, $(\mu-\lambda)$, for the middle of the interval between the time of computation and that of the phase.*

To apply this theorem we find the two values of $\tau^2 \sin(\mu-\lambda)$ corresponding to the required phase. We then find the ratio of these quantities—which will commonly be a large number, and divide the difference of the results by this ratio. The quotient will be a correction to be applied to the more accurate result in such a way as to make it deviate yet more from the less accurate one. This correction should be positive in the local forenoon, and negative in the afternoon, and its value should never materially exceed $0^{\mathrm{m}}.001\ \tau^2$.

Unless the times chosen for computation are unusually in error, say ten minutes or more, the corrected results thus obtained will be theoretically correct within less than a second. But to guard against numerical errors it is better, after making this final correction, to repeat the computations so far as to obtain new values of m and L for the corrected times. If these two quantities agree within a unit of the fourth place of decimals, the times employed are generally correct within a second of time. If they differ too widely, further corrections and computations may be made by the computer according to his own judgment.

It may be remarked that the uncertainty of the ephemerides is such that a prediction may be several seconds in error from this unavoidable cause alone.

Position-angle of Point of Contact.—The position-angle P, of the point of contact, reckoned from the north point of the sun's limb toward the east, is found by the formula

For beginning: $P = N - \psi \pm 180°$
For end: $P = N + \psi$

it being assumed that, in each case, the value of ψ is taken between the limits $\pm 90°$.

Computation of the Solar Eclipse of 1893, April 15–16, for a point whose position is—

Latitude, $\varphi = -\ 3°\ 20'$
Longitude $\lambda = +\ 38\ \ 55$

which is in or near Ceara, on the coast of Brazil.

Constants for the given place:—

$$\rho \sin \varphi' = 8.76160n$$
$$\rho \cos \varphi' = 9.99927$$

From the Eclipse Charts we find the approximate times of the phases to be as follows:—

	h	m	
Beginning	0	55	Greenwich Mean Time.
Total Phase	2	18	
Ending	3	50	

		Beginning.	Total Phase.	Ending.
Greenwich Mean Time,	April	$16^{\mathrm{d}}\ 0^{\mathrm{h}}\ 55^{\mathrm{m}}$	$2^{\mathrm{h}}\ 18^{\mathrm{m}}$	$3^{\mathrm{h}}\ 50^{\mathrm{m}}$
	μ	13° 49′ 48	34° 35′ 6″	57° 35′ 24″
	λ	38 55 0	38 55 0	38 55 0
	$\mu-\lambda$	− 25 5 12	− 4 19 54	+ 18 40 24
	$\rho \cos \varphi'$	9.99927	9.99927	9.99927
	$\sin(\mu-\lambda)$	9.62735 *n*	8.87812 *n*	9.50540
	$\log \xi$	9.62662 *n*	8.87739 *n*	9.50467
	ξ	− 0.42327	− 0.07540	+ 0.31964

		Beginning.	Total Phase.	Ending.
Greenwich Mean Time,	April	$16^d\ 0^h\ 55^m$	$2^h\ 18^m$	$3^h\ 50^m$
	$\rho \sin \varphi'$	8.76160 *n*	8.76160 *n*	8.76160 *n*
	$\cos d$	9.99292	9.99289	9.99286
		8.75452 *n*	8.75449 *n*	8.75446 *n*
	(1)	− 0.05682	− 0.05682	− 0.05681
	$\rho \cos \varphi'$	9.99927	9.99927	9.99927
	$\sin d$	9.25318	9.25399	9.25488
	$\cos (\mu-\lambda)$	9.95697	9.99876	9.97652
		9.20942	9.25202	9.23067
	(2)	+ 0.16196	+ 0.17865	+ 0.17009
(1)−(2)	η	− 0.21878	− 0.23547	− 0.22690
	$\rho \sin \varphi' \sin d$	8.01478 *n*	8.01559 *n*	8.01648 *n*
	(3)	− 0.01034	− 0.01036	− 0.01039
	$\rho \cos \varphi' \cos d \cos (\mu-\lambda)$	9.94916	9.99092	9.96865
	(4)	+ 0.88952	+ 0.97930	+ 0.93036
(3)+(4)	ζ	+ 0.87917	+ 0.96893	+ 0.91997
	const. log	7.63992	7.63992	7.63992
	$\rho \cos \varphi' \cos (\mu-\lambda)$	9.95624	9.99803	9.97579
	$\log \xi'$	7.59616	7.63795	7.61571
	ξ'	+ 0.00394	+ 0.00434	+ 0.00413
	const. log	7.63992	7.63992	7.63992
	$\xi \sin d$	8.87980 *n*	8.13138 *n*	8.75955
	$\log \eta'$	6.51972 *n*	5.77130 *n*	6.39947
	η'	− 0.00033	− 0.00006	+ 0.00025
	$x-\xi$	− 0.36548	− 0.00190	+ 0.39182
	$y-\eta$	− 0.37806	− 0.00133	+ 0.38899
	$x'-\xi'$	+ 0.00462	+ 0.00423	+ 0.00445
	$y'-\eta'$	+ 0.00467	+ 0.00440	+ 0.00458
	$m \sin M$	9.56288 *n*	7.27875 *n*	9.59308
	$m \cos M$	9.57756 *n*	7.12385 *n*	9.58994
	$\tan M$	9.98532	0.15490	0.00314
	M	224° 1′ 55″	235° 0′ 30″	45° 12′ 27″
	$\sin M$	9.84202 *n*	9.91340 *n*	9.85106
	$\log m$	9.72086	7.36535	9.74202
	$n \sin N$	7.66464	7.62634	7.64836
	$n \cos N$	7.66932	7.64345	7.66087
	$\tan N$	9.99532	9.98289	9.98749
	N	44° 41′ 30″	43° 52′ 20″	44° 10′ 28″
	$\sin N$	9.84713	9.84076	9.84314
	$\log n$	7.81751	7.78558	7.80522
	$\tan f$	7.66798	7.66586	7.66796
	$\log \zeta$	9.94407	9.98629	9.96377
		7.61205	7.65215	7.63173
	$\zeta \tan f$	0.00409	0.00449	0.00428
	l	0.53617	− 0.00972	0.53597
	L	+ 0.53208	− 0.01421	+ 0.53169

	Beginning.	Total Phase.	Ending.
Greenwich Mean Time, April	$16^d\ 0^h\ 55^m$	$2^h\ 18^m$	$3^h\ 50^m$
M−N	179° 20′ 25″	191° 8′ 10″	1° 1′ 59″
$\sin(M-N)$	8.06123	8.29727 *n*	8.25598
$\log m$	9.72086	7.36535	9.74202
	7.78209	5.66262 *n*	7.99800
$\log L$	9.72597	8.15259 *n*	9.72565
$\sin \psi$	8.05612	7.51003	8.27235
ψ	0° 39′ 7″	0° 11′ 8″	1° 4′ 22″
$\log \frac{m}{n}$	1.90335	9.57977	1.93680
$\cos(M-N)$	9.99997 *n*	9.99992 *n*	9.99993
	1.90332 *n*	9.57969 *n*	1.93673
$-\frac{m}{n}\cos(M-N)$	+ 80.04	+ 0.3799	− 86.444
$\log L$	9.72597	8.15259 *n*	9.72565
$\cos \psi$	9.99997	9.99999	9.99992
colog n	2.18249	2.21442	2.19478
	1.90843	0.36700	1.92035
$\frac{L\cos\psi}{n}$	∓ 80.99	∓ 2.328	± 83.244
	m	m	m
τ	− 0.95	− 1.948 + 2.708	− 3.200
	h	h	h
T	0 55.	2 18.	3 50.
	d h m	h m	h m
t	April 16 0 54.05	2 16.052 2 20.708	3 46.800
λ	2 35.66	2 35.666	2 35.666
	d h m	d h m	d h m
Local Mean Time,	April 15 22 18.39	April 15 23 40.385 23 45.041	April 16 1 11.134
		m	
Duration of Totality		4.656	

No correction is necessary since the assumed time differs very little from the computed ones.

Therefore we have

		d	h	m	s	
Beginning of the eclipse,	April	15	22	18	23.4	Local Mean Time.
Beginning of total eclipse,	"	15	23	40	23.1	
End of total eclipse,	"	15	23	45	2.5	
End of the eclipse,	"	16	1	11	8.0	

Angle of position:

	Beginning.		Ending.	
	°	′	°	′
N	44	41.5	44	10.5
ψ (+ 180)	180	39.1	1	4.4
P	225	20.6	45	14.9

from the north point of the sun's disk towards the east for direct image.

Elements of Occultations.—Pages 417—445 give the elements for the prediction of the times of occultation of stars and planets by the moon. In the columns referring to the star, those headed *Red'ns from* 1893.0 give the quantities necessary to reduce the mean place of the star at the beginning of 1893 to its apparent place at the time of occultation. These reductions are sufficiently accurate to be definitive.

The quantities in the following five columns are all given for the moment of geocentric conjunction of the star and moon in right ascension. Let there be a line passing from the star through the centre of the moon, and let a plane perpendicular to this line pass through the centre of the earth: this plane will be the fundamental plane for the occultation. The system of co-ordinates is similar to that already described for eclipses. The cone circumscribing the moon and star may be regarded as a cylinder having everywhere the same diameter as the moon. This cylinder will intercept the fundamental plane in a circle of which the linear diameter will be the same as that of the moon.

The *Washington Mean Time* is the moment at which the two bodies are in geocentric conjunction in right ascension. At this moment the co-ordinate x of the axis of the cylinder on the fundamental plane has the value zero. The column *Hour-Angle H* gives the common geocentric hour-angle of the moon and star at the same moment, counted from the meridian of Washington—positive toward the west and negative toward the east. Column Y gives the co-ordinate y of the axis of the cylinder upon the fundamental plane at the same moment. Columns x' and y' give the hourly variation of x and y. The linear unit in these columns is the earth's equatorial radius. The limiting parallels, north and south, show the extreme limits of latitude within which the occultation will be visible.

By the aid of these elements, the Washington mean time of immersion and emersion of a star behind the limb of the moon may be computed for any part of the earth by a method nearly the same as that already explained for computing eclipses, only more simple.

We shall first show how to compute an isolated occultation for a particular place, assuming it to be visible at that place, and then show how all the occultations which will be visible at a place may be selected and computed by a more rapid process.

(1) The geocentric co-ordinates of the place, $\rho \sin \varphi'$ and $\rho \cos \varphi'$, are to be computed with three or four places of decimals by the formulæ,

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$
$$\rho \cos \varphi' = F \cos \varphi$$

already given in connection with the eclipses.

As in the case of eclipses, it is necessary to have an approximate time of the phenomenon, corresponding to that obtained from the charts of the eclipses. The quantity H being the Washington west hour-angle of the two bodies at the moment of geocentric conjunction, $H - \lambda$ will be the local hour-angle of the star at this same moment. Let us call this angle h_0, putting

$$h_0 = H - \lambda$$

where λ is the longitude west of *Washington.*

The next step will then be to find the approximate moment of apparent conjunction in right ascension as seen from the place. An approximate correction to reduce the time and hour-angle for geocentric conjunction to those for apparent conjunction may be taken from Mr. Downes's table, on pages 448—449. This correction will have the same sign as h_0.

When this table is not available, the correction may be computed thus: Compute the quantities ξ_0, ξ' and τ from the formulæ,

$$\xi_0 = \rho \cos \varphi' \sin h_0$$
$$\xi' = [9.4192] \cos (h_0 + \tfrac{1}{8} h_0)$$
$$\tau = \frac{\xi_0}{x' - \xi'}$$

τ will then be the approximate interval between the times of geocentric and local conjunction.

By applying it to the Washington mean time of the former, as given with the elements, we shall have the Washington mean time of the latter within a few minutes.

The average duration of an occultation is about an hour. Thence, by adding $0^h.5$ to and subtracting it from the mean time of apparent conjunction, we shall have approximate times of the phases of immersion and emersion for farther computation. Let us then put,

$\tau_1 = \tau - 0^h.5$
$\tau_2 = \tau + 0^h.5$
T, the Washington mean time of geocentric conjunction in R. A.
d, the declination of the star.

(2) Compute for the moments $T + \tau_1$ and $T + \tau_2$ the following quantities, in which we write τ for each of the quantities τ_1 and τ_2. The latter, when used as angles, are to be changed to arc by multiplying by 15, and the minutes are to be further increased by one-sixth the number of degrees in order to reduce to the sidereal hour-angle.

$$\begin{aligned}
\xi &= \rho \cos \varphi' \sin (h_0 + \tau) \\
\eta &= \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (h_0 + \tau) \\
\xi' &= [9.4192]\, \rho \cos \varphi' \cos (h_0 + \tau) \\
\eta' &= [9.4192]\, \rho \cos \varphi' \sin d \sin (h_0 + \tau) = [9.4192]\, \xi \sin d \\
x &= x' \tau \\
y &= Y + y' \tau
\end{aligned}$$

Compute m, M, n and N from the equations

$$\begin{aligned}
m \sin M &= x - \xi \\
m \cos M &= y - \eta \\
n \sin N &= x' - \xi' \\
n \cos N &= y' - \eta' \\
n' &= \frac{n}{60} = [8.2218]\, n \\
\sin \psi &= [0.5650]\, m \sin (M - N)
\end{aligned}$$

Then, t_1 and t_2 from the equations

$$t_1 = -\frac{m}{n'} \cos (M - N) - \frac{[9.4350]}{n'} \cos \psi \quad \text{(Beginning.)}$$
$$t_2 = -\frac{m}{n'} \cos (M - N) + \frac{[9.4350]}{n'} \cos \psi \quad \text{(End.)}$$

The quantities t_1 and t_2 will then be the corrections in minutes to be applied to the respective times $T + \tau_1$ and $T + \tau_2$ to obtain the Washington mean times of the phases.

As in the case of eclipses, the small value of t_1 will give an accurate result for one phase, and the large value an inaccurate result for the other. Both accurate results may then be corrected by comparison with the inaccurate one, in the way described for eclipses, and a result obtained which will probably be correct within a fraction of a minute of time.

As a check upon the result, it will be advisable to compute ξ, η, x and y for the moments finally obtained. If the times are correct these quantities will fulfil the condition,

$$\sqrt{(x - \xi)^2 + (y - \eta)^2} = 0.2723$$

If $\log m \sin (M - N) = 9.4350$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\sin \psi < 1$, or $\sin \psi > 1$. In the latter case, the impossible value of $\sin \psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the ephemerides of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi = 90°$, or $270°$, according as $\sin (M - N)$ is positive or negative; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M - N)}{n'}.$$

Putting π for the moon's horizontal parallax, the distance from the moon's limb will be,

$$\pi\,[\,m \sin\,(M - N) - 0.2723\,]$$

disregarding the sign of sin $(M - N)$; or, allowing for the augmentation of the semidiameter,

$$\pi\,[m \sin\,(M - N) - 0.2723]\,[1 + z \sin \pi\,]$$

where

$$z = \rho \cos \varphi' \cos d \cos\,(h_0 + \tau) + \rho \sin \varphi' \sin d$$

The position-angle P, of the line from the moon's centre to the star at the times of contact, reckoned from the north point toward the east, is given by the formulæ: —

$$P = N - \psi \qquad \text{for immersion,}$$
$$P = N + \psi \pm 180^\circ \qquad \text{for emersion,}$$

it being supposed that the value of ψ, in each case, is taken between the limits ± 90°.

To find the angle from the vertex, we compute the angle C from the formula,

$$\tan C = \frac{\xi + t\,\xi'}{\eta + t\,\eta'}$$

in which the value of t corresponding to the phase is to be used. Then

$$V = P - C$$

is the angle from the vertex, also reckoned from the north toward the east.

As an example of an isolated occultation, we will compute that of *h* Virginis, on June 22, 1893, for Madison, Wis., whose position is

$$\varphi = +\,43^\circ\ 4'\ 37''.0$$
$$\lambda = +\quad 0^h\,49^m\,24^s.1$$

Constants for the given place,

$$\rho \sin \varphi' = 9.83217$$
$$\rho \cos \varphi' = 9.86426$$

From the elements on page 430, we have

$$H = +\ \overset{h}{0}\ \overset{m}{10.5}$$
$$h_0 = H - \lambda = -\ 0\ 38.9$$

From DOWNES's Table, pages 448—449, or from the formulæ on page 508, we find the correction to the Washington mean time of geocentric conjunction to be about -23^m, therefore the Washington mean time of apparent conjunction at the given place is June $22^d\ 7^h\ 9^m.2$; subtracting and adding 30^m, we shall have the approximate Washington mean times of immersion and emersion to be used in the computation, thus:

$$\tau_1 = -\ \overset{h}{0}\ \overset{m}{53} \qquad T + \tau_1 = \text{June}\ \overset{d}{22}\ \overset{h}{6}\ \overset{m}{39.2}$$
$$\tau_2 = +\ 0\ \ 7 \qquad T + \tau_2 = \qquad 22\ 7\ 39.2$$

	Immersion.	Emersion.
Washington Mean Time, June	$\overset{d}{22}\ \overset{h}{6}\ \overset{m}{39.2}$	$\overset{h}{7}\ \overset{m}{39.2}$
h_0	$-\ \overset{h}{0}\ \overset{m}{38}\ \overset{s}{54}$	$-\ \overset{h}{0}\ \overset{m}{38}\ \overset{s}{54}$
τ (in sidereal time)	$-\ 0\ 53\ \ 8.707$	$+\ 0\ \ 7\ \ 1.15$
$h_0 + \tau$ (in arc)	$-\,23^\circ\ 0'\ 40''$	$-\ 7^\circ\ 58'\ 13''$
$\rho \cos \varphi'$	9.86426	9.86426
$\sin\,(h_0 + \tau)$	9.59208 *n*	9.14195 *n*
$\log \xi$	9.45634 *n*	9.00621 *n*
ξ	− 0.28599	− 0.10144

		Immersion.	Emersion.
Washington Mean Time,	June	$22^d\,6^h\,39^m.2$	$7^h\,39^m.2$
	$\rho \sin \varphi'$	9.83217	9.83217
	$\cos d$	9.99385	9.99385
		9.82602	9.82602
	(1)	+ 0.66991	+ 0.66991
	$\rho \cos \varphi'$	9.86426	9.86426
	$\sin d$	9.22286 *n*	9.22286 *n*
	$\cos (h_0 + \tau)$	9.96399	9.99579
		9.05111 *n*	9.08291 *n*
	(2)	− 0.11249	− 0.12103
(1)−(2)	η	+ 0.78240	+ 0.79094
	const. log	9.41920	9.41920
	$\rho \cos \varphi' \cos (h_0 + \tau)$	9.82825	9.86005
	$\log \xi'$	9.24745	9.27925
	ξ'	+ 0.17678	+ 0.19022
	const. log	9.41920	9.41920
	$\xi \sin d$	8.67920	8.22907
	$\log \eta'$	8.09840	7.64827
	η'	+ 0.01254	+ 0.00445
	$\log x'$	9.69276	9.69276
	$\log \tau$	9.94613 *n*	9.06695
	$\log x$	9.63889 *n*	8.75971
	x	− 0.43540	+ 0.05751
	$\log y'$	9.39533 *n*	9.39533 *n*
	$\log y' \tau$	9.34146	8.46228 *n*
	$y' \tau$	+ 0.21951	− 0.02899
	Y	+ 0.82120	+ 0.82120
	y	+ 1.04071	+ 0.79221
	$x - \xi$	− 0.14941	+ 0.15895
	$y - \eta$	+ 0.25831	+ 0.00127
	$x' - \xi'$	+ 0.31612	+ 0.30268
	$y' - \eta'$	− 0.26104	− 0.25295
	$m \sin M$	9.17438 *n*	9.20126
	$m \cos M$	9.41214	7.10380
	$\tan M$	9.76224 *n*	2.09746
	M	329° 57′ 14″	89° 32′ 32″
	$\cos M$	9.93734	7.90252
	$\log m$	9.47480	9.20128
	$n \sin N$	9.49985	9.48098
	$n \cos N$	9.41671 *n*	9.40303 *n*
	$\tan N$	0.08314 *n*	0.07795 *n*
	N	129° 32′ 55″	129° 53′ 10″
	$\cos N$	9.80396 *n*	9.80704 *n*
	$\log n$	9.61275	9.59599
	colog 60	8.22185	8.22185
	$\log n'$	7.83460	7.81784

			Immersion.		Emersion.
Washington Mean Time,	June		$22^d\ 6^h\ 39^m.2$		$7^h\ 39^m.2$
	const. log		0.56500		0.56500
	$\log m$		9.47480		9.20128
	$\sin (M - N)$		9.54240 n		9.81115 n
	$\sin \psi$		9.58220 n		9.57743 n
	ψ	−	22° 27′ 56″	−	22° 12′ 24″
	$\log \frac{m}{n'}$		1.64020		1.38344
	$\cos (M - N)$		9.97232 n		9.88205
			1.61252 n		1.26549
	$-\frac{m}{n'} \cos (M - N)$	+	$40^m.975$	−	$18^m.428$
	const. log		9.43500		9.43500
	colog n'		2.16540		2.18216
	$\cos \psi$		9.96572		9.96653
			1.56612		1.58369
	$\frac{[9.43500] \cos \psi}{n'}$	+	$36^m.823$	+	$38^m.343$
	t_1	+	4.15	+	19.92
			d h m		h m
	T		June 22 6 39.2		7 39.2
Washington Mean Time of Phase,			June 22 6 43.35		7 59.12
	λ		0 49.4		0 49.4
Madison Mean Time,			June 22 5 53.95		7 9.72
Angle of position:			° ′		° ′
	N		129 32.9		129 53.2
	ψ (+ 180°)	−	22 27.9	−	22 12.4
	P		152 0.8		287 40.8

from the north point of the moon's limb toward the east for direct image.

Prediction of Many Occultations for a Given Place.—When it is desired to predict all the occultations which will be visible at some one place, tables may be constructed and applied in such a way as to greatly diminish the labor of computation. In using such tables, the most convenient course will be to find for each occultation the hour-angle of the star at the moment of apparent conjunction in right ascension, as seen from the place of observation. The table of elements, pages 417—449, gives H, the Washington hour-angle at the moment of geocentric conjunction. The corresponding geocentric hour-angle at the place will be

$$h_0 = H - \lambda \qquad (\lambda = \text{west longitude from Washington}).$$

The moment of apparent conjunction, as seen from the station, will be given by the condition $\xi = x$; or, using the values of ξ and x,

$$\rho \cos \varphi' \sin h = x' \tau$$

h being the west hour-angle of the star at the moment in question, and τ the interval, in hours of mean time, which has elapsed since geocentric conjunction. We shall therefore have,

$$h = h_0 + \tau$$

for the hour-angle at the end of the interval τ after geocentric conjunction. In strictness, τ should here be multiplied by the factor $1 + \frac{1}{365.25}$, because the star moves a little more than 15° in an hour of mean time; but the error arising from the neglect of the factor is too small to be important, as it will affect the predicted time of conjunction by less than 10 seconds. The equation for finding τ is therefore,

$$\rho \cos \varphi' \sin (h_0 + \tau) = x' \tau$$

The quantities h_0 and x' being derived immediately from the data of the Ephemeris, the quantity τ is readily obtained by successive approximation, and may be tabulated as a function of h_0 and x'. The computation of τ is effected as follows. We have

$$\sin (h_0 + \tau) = \sin h_0 + 2 \sin \tfrac{1}{2}\tau \cos (h_0 + \tfrac{1}{2}\tau) \tag{1}$$

The value of τ in arc being seldom more than 24° we may put τ itself for $2 \sin \frac{1}{2} \tau$. The equation will then become

$$\rho \cos \varphi' \sin h_0 + \tau \rho \cos \varphi' \cos (h_0 + \tfrac{1}{2}\tau) = x' \tau$$

from which we find

$$\tau = \frac{\rho \cos \varphi' \sin h_0}{x' - \rho \cos \varphi' \cos (h_0 + \frac{1}{2}\tau)} \tag{2}$$

To tabulate τ, we must first have a table of the quantities

$$\begin{aligned} \xi &= \rho \cos \varphi' \sin h \\ \xi' &= [9.41916]\, \rho \cos \varphi' \cos h \end{aligned} \tag{3}$$

which table may be formed for every 10 minutes (in time) of h. If we then put ξ_0 for the value of ξ corresponding to $h = h_0$ and ξ'_1 for the value of ξ' corresponding to $h = h_0 + \frac{1}{2}\tau$, we shall have

$$\tau = \frac{\xi_0}{x' - \xi'_1} \tag{4}$$

Since we must know the value of τ, approximately, before we can take ξ'_1 from the table, this equation can be solved only by successive approximations. The approximations converge so rapidly as to offer no difficulty. It will be best to begin by comparing values of τ for the two extremes of x', namely, $x' = 0.48$ and $x' = 0.60$, because the approximate values of τ can then be interpolated for all the intermediate values of x'. For the first approximation may be taken—

$$\begin{aligned} \tfrac{1}{2}\tau &= 50^{m} \sin \tfrac{4}{3} h_0 \quad (\text{for } x' = 0.48) \\ \tfrac{1}{2}\tau &= 40^{m} \sin \tfrac{4}{3} h_0 \quad (\text{for } x' = 0.60) \end{aligned} \tag{5}$$

or, the approximate values of τ may be taken from Mr. Downes's table, pages 448—449. It will be best to make the computation for every 30^{m} of h_0, and to find the intermediate values of τ for every 10^{m} by interpolation. Then for each 30^{m} of h_0 we take ξ' from a table with the argument $h_0 + \frac{1}{2}\tau$, and $\log \xi$ with the argument h_0, and thence compute τ by (4). If the value of τ thus arrived at differs more than 3^{m} from that employed in taking out ξ', a new value may be used to correct ξ', and the computation may be repeated. The values corresponding to $x' = 0.51$, $x' = 0.54$, and $x' = 0.57$, can then be computed with the single interpolation of approximate values of τ, and afterward the table can be extended by interpolation to every 0.01 of x' between $x' = 0.48$ and $x' = 0.60$. It will be best to compute τ in the first place to every 0.001 of an hour, and to drop the last figure in forming the definitive table. The table thus formed will be called *Table I.*

The values of η and η' may then be tabulated for every degree of the star's declination, and every 10^m of h. It is a mere question of convenience whether to compute the table for negative values of d, since by putting

$$\begin{aligned}\eta_1 &= \quad \rho \sin \varphi' \cos d \\ \eta_2 &= -\rho \cos \varphi' \sin d \cos h\end{aligned}$$

η_1 may be given in a table of single-entry; and taking η_2 from the table of double-entry for a positive d, we shall have

$$\eta = \eta_1 \pm \eta_2$$

the lower sign being used for a negative d. But the extension of the table for η to negative values of d is so readily made that it will probably be found better to do it, so as to save taking out η_1 and η_2 separately.

This table for η will be called *Table II*, and the corresponding one for η' with the same arguments *Table III*. The precepts for using the tables will then be as follow:—

From Table I with the arguments x' and $H - \lambda = h_0$ take out the value of τ. It will be sufficient to use the nearest 0.01 of x'. τ will be of the same sign as h_0. Then, enter Table II with the arguments d (the star's declination) and $h = h_0 + \tau$, and take out the value of η. Form the quantities $y = Y + y' \tau$, and $y - \eta$. If the latter quantity lies between the limits ± 0.28, it is almost certain that there will be an occultation. If it falls without the limits ± 0.33, it is almost certain that there will not be an occultation. Between the years 1881 and 1893 these last limits may be reduced to ± 0.32, and cases near this limit may be rejected if y' is small. A convenient rule to adopt will be—

$$\begin{array}{rl} y' < 0.10, & = \pm 0.29 \\ 0.10 < y' < 0.15, & = \pm 0.30 \\ 0.15 < y' < 0.20, & = \pm 0.31 \\ 0.20 < y' & = \pm 0.33 \text{ or } \pm 0.32 \end{array}$$

Here, only the absolute value of y' is to be considered, without respect to its algebraic sign.

If $y - \eta$ falls between the limits thus indicated, take the values of ξ' and η' from the appropriate tables and compute v, Q and Δ from the equations

$$\begin{aligned}v \sin Q &= y' - \eta' \\ v \cos Q &= x' - \xi' \\ \Delta &= (y - \eta) \cos Q\end{aligned}$$

If $\Delta > 0.2723$ or $\log \Delta > 9.4350$ there will be no occultation, though the moon may graze the star when $\Delta - 0.2723$ is very small. If $\Delta < 0.2723$, compute

$$\tau_1 = -\frac{y - \eta}{v} \sin Q \qquad \cos P = \frac{\Delta}{0.2723} \quad (P < 180^\circ)$$

$$\tau_2 = \frac{0.2723 \sin P}{v}$$

We shall then have—

Local mean time of immersion, $T - \lambda + \tau + \tau_1 - \tau_2$
Local mean time of emersion, $T - \lambda + \tau + \tau_1 + \tau_2$
Position-angle from north toward east at immersion, $180^\circ - Q - P$
Position-angle from north toward east at emersion, $180^\circ - Q + P$

In predicting the occultations for a given place, the first operation will be to go over the list of occultations in the Ephemeris, and select those which may be visible. The conditions of possible visibility are:—

1. The limiting parallels in the last columns must include the latitude of the place.

2. The quantity $H - \lambda$, taken without regard to sign, must be less than the semi-diurnal arc of the star by at least one hour. On very rare occasions an emersion might be seen in the east horizon, or an immersion in the west, when this difference is a few minutes less than an hour.

3. The sun must not be much more than an hour above the horizon at the local mean time $T - \lambda$, unless the star is bright enough to be seen in the day time.

The most convenient course will be to write the value of $-\lambda$ on the bottom of a sheet of paper, and passing through the list of occultations, pause over each one for which condition (1) is fulfilled, and examine whether conditions (2) and (3) are fulfilled. If either fails, the computer passes on. Very often it will require some examination to find whether $H - \lambda$ or $T - \lambda$ falls within the limits; in these cases, the computer may mark the occultation for trial and leave the decision for the subsequent operations. The whole list can be gone over in less than a day, and it will probably be found that about one-tenth of the occultations are marked for trial.

Phenomena of Planets and Satellites, pages 450—483.—These are, for the most part, sufficiently explained in the body of the work. The following additional explanations are added for completeness:

Disks of Mercury and Venus, pages 450—451.—The angle θ, needed in reducing meridian observations, is the angle which the arc of the great circle from the planet to the sun, makes with the arc from the planet toward the west, reckoned in the direction west, north, east, south. This position-angle is reckoned from 0° to 360°, as in the measurement of double stars, the planet taking the place of the central star. But its measure is 90° greater than that of a double star.

We may also regard θ as expressing the angle which the line of cusps makes with the meridian, the positive direction of the meridian being toward the north, and the positive direction of the line of cusps that in which a person following this line would have the illuminated portion of the disk on his right.

Satellites of Jupiter, pages 453—477.—The times of phenomena are explained at the foot of each page; the diagram is on page 453.

Phenomena, pages 484—485.—The conjunctions, quadratures, and oppositions of the planets with respect to the sun, give the hours when the longitude of each planet differs from that of the sun by 0°, 90° or 180°.

The conjunctions of the moon and planets with each other are given in right ascension. The degrees and minutes to the right show the difference of declination at the moment of conjunction.

Latitude by Observed Altitude of Polaris.—Table IV replaces the Tables A, B, C, D, given as a *Supplement* to the volumes of the Ephemeris for 1874—1881, and is intended for use at sea and reconnaissance on land. It will furnish an approximate value of the latitude, the probable error of which, in so far as the table is concerned, will be a few tenths of a minute of arc.

The directions for using the table are adapted to a right ascension of Polaris equal to $1^h\ 18^m.9$. Somewhat greater accuracy may be insured by substituting the right ascension of Polaris at the date of observation, from pages 302—313 of this volume.

APPENDIX.

ON THE CONSTRUCTION OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC FOR 1893.

The adopted constants of precession, nutation, and aberration are those of **Struve** and **Peters**, namely:—

$$\text{Precession} = 50''.2411 + 0''.0002268\ t$$
$$\text{Nutation} = 9''.2231 + 0''.000009\ t$$
$$\text{Aberration} = 20''.4451$$

in which t is the number of years after 1800.0.

The obliquity of the ecliptic is that of **Hansen**'s *Tables du Soleil*, which is $0''.31$ greater than that of **Peters**, given in the issues of this Ephemeris preceding that for 1882. A comparison of **Hansen**'s mean obliquity with that of **Peters** and of **Le Verrier** at different epochs is given in the following table:—

Epoch.	Hansen.			Peters.	Le Verrier.	H.—P.	H.—L.
	°	′	″	″	″	″	″
1750	23	28	18.19	17.44	19.42	+0.75	−1.23
1800	23	27	54.80	54.22	55.63	+0.58	−0.83
1850	23	27	31.42	30.99	31.83	+0.43	−0.41
1900	23	27	8.02	7.76	8.03	+0.26	−0.01

The formulæ for reducing the places of the fixed stars, page 280, correspond to the *Star Tables of the American Ephemeris*, Washington, 1869.

The mean right ascensions of stars have been reduced to **Newcomb**'s fundamental standard in the catalogue attached to the *Washington Observations for* 1870, Appendix II, with the following exceptions: The right ascensions of the 48 circumpolar stars north of 60° north declination are from Dr. **Gould**'s *Standard Places of Fundamental Stars*, second edition, United States Coast Survey Office, 1866. Of the twelve stars south of 50° south declination, the positions of β Hydri, α Trianguli Australis, and σ Octantis, have been corrected from data furnished by Dr. **Gould**; while the remaining nine are, as before, from the *British Nautical Almanac* for 1848.

The right ascensions of the additional stars in the general list, whose apparent right ascensions are given in a subsequent section, have been taken partly from the *Catalogue of* 1098 *Standard Clock and Zodiacal Stars*, forming Part IV of Vol. I of *Astronomical Papers Prepared for the Use of the American Ephemeris and Nautical Almanac*, Washington, 1881; and partly from the catalogue of the Astronomische Gesellschaft of 1878. A few have been derived from recent catalogues without a rigorous reduction for equinox.

The mean declinations of stars are taken from Boss's paper in the *Report of the Northern Boundary Commission*, Washington, 1879, for all stars found therein. The declinations of all the other stars have been reduced to the same standard, except those of the additional ones above, which have been taken partly from the Astronomische Gesellschaft list, and partly from places in recent catalogues. To the apparent places of Sirius and Procyon have been applied the periodic corrections resulting from **Auwers**'s investigations.

The values of these corrections are:—

Year.	Sirius.		Procyon	
1893.0	$\Delta\alpha = +0^s.150$	$\Delta\delta = +0''.71$	$\Delta\alpha = +0^s.065$	$\Delta\delta = +0''.41$
1894.0	$\Delta\alpha = +0.137$	$\Delta\delta = +1.05$	$\Delta\alpha = +0.068$	$\Delta\delta = +0.25$

The ephemeris of the sun is constructed from Hansen *and* Olufsen's *Tables du Soleil*, Copenhagen, 1853, except that Struve's aberration has been used. This is equivalent to adding 0″.19 to the true longitudes, but it does not affect the right ascensions and declinations. The sun's rectangular equatorial co-ordinates have been computed from the longitudes and latitudes by the following formulæ:—

$$\begin{aligned} X &= R \cos \lambda \\ Y &= R \sin \lambda \cos \omega - 19.3\, R\, \beta \\ Z &= R \sin \lambda \sin \omega + 44.5\, R\, \beta \end{aligned}$$

The reductions to mean equinox, 1893.0, are computed by the formulæ,

$$\begin{aligned} \Delta X' &= + Y \sec \omega\, \Delta \lambda \sin 1'' \\ \Delta Y' &= - X \cos \omega\, \Delta \lambda \sin 1'' + Z\, \Delta \omega \sin 1'' - 9.4\, \tau\, R \sin (\lambda + 187^\circ) \\ \Delta Z' &= - X \sin \omega\, \Delta \lambda \sin 1'' - Y\, \Delta \omega \sin 1'' + 21.7\, \tau\, R \sin (\lambda + 187^\circ) \end{aligned}$$

Wherein—

λ and β	are the longitude and latitude of the sun referred to the equinox and ecliptic of the date;
ω,	the obliquity of the ecliptic;
$\Delta \lambda$,	the reduction of longitude for precession and nutation from January 0;
$\Delta \omega$,	the reduction of the mean to the apparent obliquity;
τ,	the fraction of the year since January 0.

The numerical coefficients are in units of the seventh place of decimals. The correction for latitude has been taken from Goetze's paper in the *Astronomical Journal*, Vol. II, page 71.

The mean equatorial horizontal parallax of the sun, adopted from Professor Newcomb's *Investigation of the Distance of the Sun and the Elements which depend on it*,[*] is 8″.848. The adopted semidiameter of the sun at the earth's mean distance is 16′ 2″. In the computations pertaining to eclipses, Bessel's semidiameter, 15′ 59″.788 has been used.

The right ascension, declination and parallax of the moon are derived from Hansen's *Tables de la Lune*, London, 1857, the mean longitude being corrected in accordance with Newcomb's *Researches on the Motion of the Moon*, Part I, page 268,[†] and a corrected table being substituted for Table XXXIV.

The semidiameter of the moon is computed from the moon's horizontal parallax by the formula,

$$S = 0.272274\, \pi + 2''.5$$

The constant 2″.5 is omitted in the computation of eclipses and occultations, as due entirely to telescopic and ocular irradiation.

The ephemeris of Mercury is derived from Professor Winlock's *Tables of Mercury*, Washington, 1864. They are based on the older theory of Le Verrier, published in the Additions to the *Connaissance des Temps* for 1848.

The ephemeris of Venus is derived from Mr. G. W. Hill's *Tables of Venus*, Washington, 1872.

The ephemeris of Mars is derived from manuscript tables constructed from Lindenau's Tables. Mr. Hugh Breen's results, contained in his paper *On the Corrections of* Lindenau's *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX, have also been discussed and applied; and Le Verrier's secular variations of the elements are likewise adopted. The perturbations produced by Jupiter have been increased by $\frac{1}{60}$ of their value. The following are the corresponding corrected elements and annual variations for Washington, 1855.0:—

$$\begin{array}{lcrcrl} L & = & 320^\circ\ 13'\ 33''.87 & + & 689101''.1527 & t \\ \pi & = & 333\ \ 23\ \ 17.84 & + & 65.9990 & t \\ \Omega & = & 48\ \ 25\ \ 55.29 & + & 27.6997 & t \\ i & = & 1\ \ 51\ \ \ 2.20 & - & 0.02141 & t \\ e & = & 19238''.75 & + & 0.18549 & t \\ n & = & 689050''.8927 & & & \\ a & = & 1.5236915 & & & \end{array}$$

The ephemeris of Jupiter is derived from manuscript tables constructed from Bouvard's Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The ephemeris of Saturn is derived from a provisional theory constructed by Mr. George W. Hill, and still unpublished.

The ephemerides of Uranus and Neptune are derived from Professor Newcomb's Tables, published by the *Smithsonian Institution*.

---

[*] *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1865, Appendix II.

[†] *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1875, Appendix II.

The semidiameters of the planets are computed from the following values:—

	Semidiameter.	Log Dist.	Authority.
Mercury	3″.34	0.00	Le Verrier, *Theory of Mercury.*
Venus	8.546 ± 0.086″	0.00	Peirce, from the Washington Observations of 1845 and 1846, made with the Mural Circle.
Mars	2.842 ± 0.057	0.25	
Jupiter (polar)	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	
Neptune	1.28	1.48	
Jupiter (equatorial)	20.00	0.70	
Saturn (equatorial)	9.38	0.95	

The elements of eclipses of the sun and occultations of stars by the moon are adapted to Bessel's method, using the special forms in Chauvenet's *Spherical and Practical Astronomy*. The adopted semidiameters are:—

Semidiameter of the sun at distance unity. . . . 959″.788
Ratio of radius of moon to radius of earth . . . 0.27227

The eclipses of Jupiter's satellites are computed from Todd's *Continuation of* Damoiseau's *Tables* Washington, 1876. The occultations, transits, etc., are computed from Woolhouse's Tables, *British Nautical Almanac* for 1835, Table II of each satellite having been adapted to Damoiseau's Tables.

The elongations and conjunctions of the satellites of Saturn, except those of Titan, Hyperion, and Iapetus, are computed from manuscript tables prepared by Professor Newcomb.

The apparent elements of the rings of Saturn are computed from Bessel's data, except those for the dusky ring.

The elongations of the satellites of Uranus, and of the satellite of Neptune are computed from the data of Professor Newcomb's *Uranian and Neptunian Systems*, Washington, 1875.

In compiling the positions of observatories, the latest available data have been used. The positions have been furnished, in many instances, through the courtesy of the directors of the Observatories, in response to a circular issued by the Superintendent of the American Ephemeris.

The reduction to geocentric latitude, and the logarithm of the radius of the earth, are derived from Bessel's elements of the terrestrial spheroid, as adopted in Table III of Chauvenet's *Spherical and Practical Astronomy*, Vol. II:—

$$\log e = 8.9122052$$
$$\varphi' - \varphi = -11' 30''.65 \sin 2\varphi + 1''.16 \sin 4\varphi$$
$$\log \rho = 9.9992747 + 0.0007271 \cos 2\varphi - 0.0000018 \cos 4\varphi$$

Table IV, for finding the latitude from an observed altitude of Polaris, is constructed for—
(1) An altitude of Polaris equal to 45°.
(2) A declination of Polaris equal to + 88° 44′.

The principal computations of the Ephemeris have been distributed in the following manner:—

The ephemeris of the Sun was computed by Mr. E. Davis; the Moon's longitude, latitude, semidiameter and horizontal parallax, by Professor Keith; the right ascension and declination, by Professor Van Vleck; the culminations, by Mr. Meier; the lunar distances, by Mr. Bradford; Mercury and Venus, by Mr. E. P. Austin; Mars, Jupiter, Saturn, Uranus, and Neptune, by Mr. Roberdeau Buchanan; Jupiter's satellites, by Professor H. D. Todd; the satellites of Saturn, Uranus, and Neptune, by Dr. Morrison. The mean and apparent places of the fixed stars were prepared by Mr. English and Mr. Hedrick; the general constants for their reduction, by Mr. Buchanan; the occultations, by Mr. Auhagen; and the eclipses were computed and the charts projected by Mr. Buchanan.

CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																									
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																							
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																		
		102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	28	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	36
1 10	1 50	30	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	31	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The correction is to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side-real.	0$^{h.}$		1$^{h.}$		2$^{h.}$		3$^{h.}$		4$^{h.}$		5$^{h.}$		6$^{h.}$		7$^{h.}$		For Seconds.	
m	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	s	s
0	0	0.000	0	9.830	0	19.659	0	29.489	0	39.318	0	49.148	0	58.977	1	8.807	0	0.000
1	0	0.164	0	9.993	0	19.823	0	29.653	0	39.482	0	49.312	0	59.141	1	8.971	1	0.003
2	0	0.328	0	10.157	0	19.987	0	29.816	0	39.646	0	49.475	0	59.305	1	9.135	2	0.005
3	0	0.491	0	10.321	0	20.151	0	29.980	0	39.810	0	49.639	0	59.469	1	9.298	3	0.008
4	0	0.655	0	10.485	0	20.314	0	30.144	0	39.974	0	49.803	0	59.633	1	9.462	4	0.011
5	0	0.819	0	10.649	0	20.478	0	30.308	0	40.137	0	49.967	0	59.796	1	9.626	5	0.014
6	0	0.983	0	10.813	0	20.642	0	30.472	0	40.301	0	50.131	0	59.960	1	9.790	6	0.016
7	0	1.147	0	10.976	0	20.806	0	30.635	0	40.465	0	50.295	1	0.124	1	9.954	7	0.019
8	0	1.311	0	11.140	0	20.970	0	30.799	0	40.629	0	50.458	1	0.288	1	10.118	8	0.022
9	0	1.474	0	11.304	0	21.134	0	30.963	0	40.793	0	50.622	1	0.452	1	10.281	9	0.025
10	0	1.638	0	11.468	0	21.297	0	31.127	0	40.956	0	50.786	1	0.616	1	10.445	10	0.027
11	0	1.802	0	11.632	0	21.461	0	31.291	0	41.120	0	50.950	1	0.779	1	10.609	11	0.030
12	0	1.966	0	11.795	0	21.625	0	31.455	0	41.284	0	51.114	1	0.943	1	10.773	12	0.033
13	0	2.130	0	11.959	0	21.789	0	31.618	0	41.448	0	51.278	1	1.107	1	10.937	13	0.035
14	0	2.294	0	12.123	0	21.953	0	31.782	0	41.612	0	51.441	1	1.271	1	11.100	14	0.038
15	0	2.457	0	12.287	0	22.117	0	31.946	0	41.776	0	51.605	1	1.435	1	11.264	15	0.041
16	0	2.621	0	12.451	0	22.280	0	32.110	0	41.939	0	51.769	1	1.599	1	11.428	16	0.044
17	0	2.785	0	12.615	0	22.444	0	32.274	0	42.103	0	51.933	1	1.762	1	11.592	17	0.046
18	0	2.949	0	12.778	0	22.608	0	32.438	0	42.267	0	52.097	1	1.926	1	11.756	18	0.049
19	0	3.113	0	12.942	0	22.772	0	32.601	0	42.431	0	52.260	1	2.090	1	11.920	19	0.052
20	0	3.277	0	13.106	0	22.936	0	32.765	0	42.595	0	52.424	1	2.254	1	12.083	20	0.055
21	0	3.440	0	13.270	0	23.099	0	32.929	0	42.759	0	52.588	1	2.418	1	12.247	21	0.057
22	0	3.604	0	13.434	0	23.263	0	33.093	0	42.922	0	52.752	1	2.582	1	12.411	22	0.060
23	0	3.768	0	13.598	0	23.427	0	33.257	0	43.086	0	52.916	1	2.745	1	12.575	23	0.063
24	0	3.932	0	13.761	0	23.591	0	33.420	0	43.250	0	53.080	1	2.909	1	12.739	24	0.066
25	0	4.096	0	13.925	0	23.755	0	33.584	0	43.414	0	53.243	1	3.073	1	12.903	25	0.068
26	0	4.259	0	14.089	0	23.919	0	33.748	0	43.578	0	53.407	1	3.237	1	13.066	26	0.071
27	0	4.423	0	14.253	0	24.082	0	33.912	0	43.742	0	53.571	1	3.401	1	13.230	27	0.074
28	0	4.587	0	14.417	0	24.246	0	34.076	0	43.905	0	53.735	1	3.564	1	13.394	28	0.076
29	0	4.751	0	14.581	0	24.410	0	34.240	0	44.069	0	53.899	1	3.728	1	13.558	29	0.079
30	0	4.915	0	14.744	0	24.574	0	34.403	0	44.233	0	54.063	1	3.892	1	13.722	30	0.082
31	0	5.079	0	14.908	0	24.738	0	34.567	0	44.397	0	54.226	1	4.056	1	13.886	31	0.085
32	0	5.242	0	15.072	0	24.902	0	34.731	0	44.561	0	54.390	1	4.220	1	14.049	32	0.087
33	0	5.406	0	15.236	0	25.065	0	34.895	0	44.724	0	54.554	1	4.384	1	14.213	33	0.090
34	0	5.570	0	15.400	0	25.229	0	35.059	0	44.888	0	54.718	1	4.547	1	14.377	34	0.093
35	0	5.734	0	15.563	0	25.393	0	35.223	0	45.052	0	54.882	1	4.711	1	14.541	35	0.096
36	0	5.898	0	15.727	0	25.557	0	35.386	0	45.216	0	55.046	1	4.875	1	14.705	36	0.098
37	0	6.062	0	15.891	0	25.721	0	35.550	0	45.380	0	55.209	1	5.039	1	14.868	37	0.101
38	0	6.225	0	16.055	0	25.885	0	35.714	0	45.544	0	55.373	1	5.203	1	15.032	38	0.104
39	0	6.389	0	16.219	0	26.048	0	35.878	0	45.707	0	55.537	1	5.367	1	15.196	39	0.106
40	0	6.553	0	16.383	0	26.212	0	36.042	0	45.871	0	55.701	1	5.530	1	15.360	40	0.109
41	0	6.717	0	16.546	0	26.376	0	36.206	0	46.035	0	55.865	1	5.694	1	15.524	41	0.112
42	0	6.881	0	16.710	0	26.540	0	36.369	0	46.199	0	56.028	1	5.858	1	15.688	42	0.115
43	0	7.045	0	16.874	0	26.704	0	36.533	0	46.363	0	56.192	1	6.022	1	15.851	43	0.117
44	0	7.208	0	17.038	0	26.867	0	36.697	0	46.527	0	56.356	1	6.186	1	16.015	44	0.120
45	0	7.372	0	17.202	0	27.031	0	36.861	0	46.690	0	56.520	1	6.350	1	16.179	45	0.123
46	0	7.536	0	17.366	0	27.195	0	37.025	0	46.854	0	56.684	1	6.513	1	16.343	46	0.126
47	0	7.700	0	17.529	0	27.359	0	37.188	0	47.018	0	56.848	1	6.677	1	16.507	47	0.128
48	0	7.864	0	17.693	0	27.523	0	37.352	0	47.182	0	57.011	1	6.841	1	16.671	48	0.131
49	0	8.027	0	17.857	0	27.687	0	37.516	0	47.346	0	57.175	1	7.005	1	16.834	49	0.134
50	0	8.191	0	18.021	0	27.850	0	37.680	0	47.510	0	57.339	1	7.169	1	16.998	50	0.137
51	0	8.355	0	18.185	0	28.014	0	37.844	0	47.673	0	57.503	1	7.332	1	17.162	51	0.139
52	0	8.519	0	18.349	0	28.178	0	38.008	0	47.837	0	57.667	1	7.496	1	17.326	52	0.142
53	0	8.683	0	18.512	0	28.342	0	38.171	0	48.001	0	57.831	1	7.660	1	17.490	53	0.145
54	0	8.847	0	18.676	0	28.506	0	38.335	0	48.165	0	57.994	1	7.824	1	17.654	54	0.147
55	0	9.010	0	18.840	0	28.670	0	38.499	0	48.329	0	58.158	1	7.988	1	17.817	55	0.150
56	0	9.174	0	19.004	0	28.833	0	38.663	0	48.492	0	58.322	1	8.152	1	17.981	56	0.153
57	0	9.338	0	19.168	0	28.997	0	38.827	0	48.656	0	58.486	1	8.315	1	18.145	57	0.156
58	0	9.502	0	19.331	0	29.161	0	38.991	0	48.820	0	58.650	1	8.479	1	18.309	58	0.158
59	0	9.666	0	19.495	0	29.325	0	39.154	0	48.984	0	58.814	1	8.643	1	18.473	59	0.161
Side-real.	0$^{h.}$		1$^{h.}$		2$^{h.}$		3$^{h.}$		4$^{h.}$		5$^{h.}$		6$^{h.}$		7$^{h.}$		For Seconds.	

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	$8^{\text{h.}}$	$9^{\text{h.}}$	$10^{\text{h.}}$	$11^{\text{h.}}$	$12^{\text{h.}}$	$13^{\text{h.}}$	$14^{\text{h.}}$	$15^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 7.784	2 17.614	2 27.443	0	0.000
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 7.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 8.112	2 17.941	2 27.771	2	0.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 8.276	2 18.105	2 27.935	3	0.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 8.440	2 18.269	2 28.099	4	0.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 8.603	2 18.433	2 28.263	5	0.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 8.767	2 18.597	2 28.426	6	0.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 8.931	2 18.761	2 28.590	7	0.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 9.095	2 18.924	2 28.754	8	0.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 9.259	2 19.088	2 28.918	9	0.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 9.423	2 19.252	2 29.082	10	0.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 9.586	2 19.416	2 29.245	11	0.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 9.750	2 19.580	2 29.409	12	0.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 0.084	2 9.914	2 19.744	2 29.573	13	0.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 0.248	2 10.078	2 19.907	2 29.737	14	0.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 0.412	2 10.242	2 20.071	2 29.901	15	0.041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 0.576	2 10.405	2 20.235	2 30.065	16	0.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 0.740	2 10.569	2 20.399	2 30.228	17	0.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 0.904	2 10.733	2 20.563	2 30.392	18	0.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 1.067	2 10.897	2 20.727	2 30.556	19	0.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 1.231	2 11.061	2 20.890	2 30.720	20	0.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 1.395	2 11.225	2 21.054	2 30.884	21	0.057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 1.559	2 11.388	2 21.218	2 31.048	22	0.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 1.723	2 11.552	2 21.382	2 31.211	23	0.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 1.887	2 11.716	2 21.546	2 31.375	24	0.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 2.050	2 11.880	2 21.709	2 31.539	25	0.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 2.214	2 12.044	2 21.873	2 31.703	26	0.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 2.378	2 12.208	2 22.037	2 31.867	27	0.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 2.542	2 12.371	2 22.201	2 32.031	28	0.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 2.706	2 12.535	2 22.365	2 32.194	29	0.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 2.869	2 12.699	2 22.529	2 32.358	30	0.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 3.033	2 12.863	2 22.692	2 32.522	31	0.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 3.197	2 13.027	2 22.856	2 32.686	32	0.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 3.361	2 13.191	2 23.020	2 32.850	33	0.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 3.525	2 13.354	2 23.184	2 33.013	34	0.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 3.689	2 13.518	2 23.348	2 33.177	35	0.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 3.852	2 13.682	2 23.512	2 33.341	36	0.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 4.016	2 13.846	2 23.675	2 33.505	37	0.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 4.180	2 14.010	2 23.839	2 33.669	38	0.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 4.344	2 14.173	2 24.003	2 33.833	39	0.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 4.508	2 14.337	2 24.167	2 33.996	40	0.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 4.672	2 14.501	2 24.331	2 34.160	41	0.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 4.835	2 14.665	2 24.495	2 34.324	42	0.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 4.999	2 14.829	2 24.658	2 34.488	43	0.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 5.163	2 14.993	2 24.822	2 34.652	44	0.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 5.327	2 15.156	2 24.986	2 34.816	45	0.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 5.491	2 15.320	2 25.150	2 34.979	46	0.126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 5.655	2 15.484	2 25.314	2 35.143	47	0.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 5.818	2 15.648	2 25.477	2 35.307	48	0.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 5.982	2 15.812	2 25.641	2 35.471	49	0.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 6.146	2 15.976	2 25.805	2 35.635	50	0.137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 6.310	2 16.139	2 25.969	2 35.798	51	0.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 6.474	2 16.303	2 26.133	2 35.962	52	0.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 6.637	2 16.467	2 26.297	2 36.126	53	0.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 6.801	2 16.631	2 26.460	2 36.290	54	0.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 6.965	2 16.795	2 26.624	2 36.454	55	0.150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 7.129	2 16.959	2 26.788	2 36.618	56	0.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 7.293	2 17.122	2 26.952	2 36.781	57	0.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 7.457	2 17.286	2 27.116	2 36.945	58	0.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 7.620	2 17.450	2 27.280	2 37.109	59	0.161
Sidereal.	$8^{\text{h.}}$	$9^{\text{h.}}$	$10^{\text{h.}}$	$11^{\text{h.}}$	$12^{\text{h.}}$	$13^{\text{h.}}$	$14^{\text{h.}}$	$15^{\text{h.}}$	For Seconds.	

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side-real.	$16^{h.}$	$17^{h.}$	$18^{h.}$	$19^{h.}$	$20^{h.}$	$21^{h.}$	$22^{h.}$	$23^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080	0	0.000
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2	0.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3	0.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4	0.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5	0.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6	0.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7	0.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8	0.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9	0.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10	0.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11	0.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12	0.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13	0.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14	0.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15	0.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16	0.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17	0.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18	0.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19	0.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	0.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	0.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	0.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	0.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	0.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	0.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	0.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	0.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	0.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	0.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	0.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	0.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	0.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	0.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	0.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	0.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	0.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	0.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	0.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	0.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	0.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	0.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	0.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	0.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	0.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45	0.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	0.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	0.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	0.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	0.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	0.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	0.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	0.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	0.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	0.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	0.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	0.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	0.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	0.158
59	2 46.939	2 56.768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	0.161
Side-real.	$16^{h.}$	$17^{h.}$	$18^{h.}$	$19^{h.}$	$20^{h.}$	$21^{h.}$	$22^{h.}$	$23^{h.}$	For Seconds.	

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	.$0^{h.}$	$1^{h.}$	$2^{h.}$	$3^{h.}$	$4^{h.}$	$5^{h.}$	$6^{h.}$	$7^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995	0	0.000
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	1	0.003
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	2	0.005
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	3	0.008
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	4	0.011
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 9.817	5	0.014
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	6	0.016
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	7	0.019
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	8	0.022
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	9	0.025
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	10	0.027
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	11	0.030
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	12	0.033
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	13	0.036
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.296	14	0.038
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	15	0.041
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	16	0.044
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 1.932	1 11.788	17	0.047
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	18	0.049
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	19	0.052
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	20	0.055
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	21	0.057
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	22	0.060
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	23	0.063
24	0 3.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	24	0.066
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	25	0.068
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	26	0.071
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	27	0.074
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	28	0.077
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	29	0.079
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	30	0.082
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	31	0.085
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	32	0.088
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	33	0.090
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	34	0.093
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	35	0.096
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	36	0.099
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	37	0.101
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	38	0.104
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	39	0.107
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	40	0.110
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	41	0.112
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	42	0.115
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	43	0.118
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	44	0.120
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	45	0.123
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	46	0.126
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	47	0.129
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	48	0.131
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	49	0.134
50	0 8.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 7.353	1 17.209	50	0.137
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	51	0.140
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	52	0.142
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	53	0.145
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	54	0.148
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	55	0.151
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	56	0.153
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	57	0.156
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 8.667	1 18.523	58	0.159
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	59	0.162
Mean Solar.	$0^{h.}$	$1^{h.}$	$2^{h.}$	$3^{h.}$	$4^{h.}$	$5^{h.}$	$6^{h.}$	$7^{h.}$	For Seconds.	